

# CHAPTER 2 - ALTERNATIVES

## I. INTRODUCTION

This chapter describes and compares three Action alternatives and a No Action alternative for the BCLMP. It includes a description of each Action alternative considered in detail. Maps of each alternative are provided in Appendix A.

Chapter 2 is intended to present the alternatives in comparative form, defining the issues and providing a clear basis of choice among options for the decision maker and the public (40 CFR 1502.14). Some of the information used to compare the alternatives is based upon the design of the alternative (i.e., acres treated or not treated) and some of the information is based upon the environmental, social and economic effects of implementing each alternative (i.e., impacts to wildlife of treating or not treating areas). Additional information regarding the alternatives is included in Chapter 3, “Affected Environment and Environmental Consequences.” Chapter 3 contains the detailed scientific basis for establishing baselines and measuring the potential environmental consequences of each of the alternatives.

Chapter 2 also details design criteria and mitigation measures that would be implemented with any action alternatives, monitoring efforts, describes projects that could contribute to cumulative effects, and discusses consistency with the Forest Plan.

## II. ALTERNATIVES CONSIDERED IN DETAIL

### A. ACTION ALTERNATIVES

#### *Vegetation Treatment*

A combination of mechanical fuels treatments, hand thinning, and prescribed fire was considered over the 14,053 acre project area to meet the purpose and need for the project. As stated in Chapter 2, the purpose of the BCLMP is to:

- 1) Reduce fuel loading (surface, ladder, and canopy fuels) on the landscape to promote low intensity fires as opposed to stand replacement fires, and
- 2) Promote a healthy, structurally diverse, productive, and vigorous growing ponderosa pine ecosystem that is resilient and sustainable.

Mechanical treatment, including the use of commercial logging and noncommercial treatment, mastication equipment and machinery, is proposed in each action alternative as a management tool to meet desired fuels objectives. The fuels objective is to change fire behavior by reducing the potential for surface fire to transition to crown fire. This objective may be achieved by creating a distribution of forest age classes, structure and surface fuel conditions that are more resistant to high-severity stand replacement wildfire, and moving the Fire Regime Condition

Class (FRCC) back to or towards a FRCC rating of 1 to allow natural fires to burn with low severity and more frequency.

The action alternatives include a combination of commercial and noncommercial silvicultural prescriptions that are based on the existing and desired stand condition. Proposed silvicultural treatments are summarized in Table 2.1 below and described in detail in Appendix B.

**Table 2.1: Silvicultural Prescriptions**

Code	Treatment	Desired Stand Condition
<b>Commercial Treatment</b>		
<b>CT</b>	<b>Commercial Thin</b> With & without prescribed fire. See Table 2.4.	Late development open canopy stands post treatment. Open grown, predominately single story, variable spaced, healthy, productive ponderosa pine communities with limited ladder fuels and low canopy coverage. Canopy coverage ranges from 20 to 30%, average 25%.
<b>CT1</b>	<b>Commercial Thin – Wildlife</b> No prescribed fire	Late development closed canopy stands. Predominately single story, variable spaced, healthy, ponderosa pine communities with limited ladder fuels. Retains at least 50 percent canopy cover for wildlife.
<b>LIB</b>	<b>Liberation Cut</b> Overstory removal, precommercial thin. With prescribed fire.	Promotes mid development open structure. Open grown, predominately single story, variable spaced, healthy, productive, ponderosa pine communities with limited ladder fuels and lower stocking densities to promote lower canopy coverage.
<b>SC</b>	<b>Special Cut</b> Green Ash/Aspen enhancement. With & without prescribed fire. See Table 2.4.	Removes competing ponderosa pine from green ash/aspen stands. Green ash communities with less than 10% ponderosa pine and aspen communities with no ponderosa pine communities.
<b>SH1</b>	<b>Shelterwood Seed Tree Cut</b> With & without prescribed fire. See Table 2.4.	Fully stocked post replacement stands that will progress through mid open and then late open development stand conditions. Open grown, predominately single story, variable spaced, healthy, productive ponderosa pine communities with limited ladder fuels and low canopy coverage. Canopy cover ranges from 15 – 25%, average 20%.
<b>ST1</b>	<b>Seed Tree Cut</b> With & without prescribed fire. See Table 2.4.	Fully stocked post replacement stands that will progress through mid open development and then to late open development stand conditions. Open grown, predominately single story, variable spaced, healthy, productive ponderosa pine communities with limited ladder fuels and low canopy coverage. Canopy cover ranges from 5 – 15%, average 10%.
<b>STR</b>	<b>Seed Tree Removal</b> With & without prescribed fire. See Table 2.4.	Promotes post replacement development structure that will progress into mid development open stands. Open grown, predominately single story, variable spaced, healthy, productive, ponderosa pine communities with limited ladder fuels and lower stocking densities to promote lower canopy coverage.
<b>STR1</b>	<b>Seed Tree Removal</b> No prescribed fire	Seed tree removal, commercial & noncommercial thinning, slashing, and natural regeneration. Promotes post replacement development structure and late development open structure.

Code	Treatment	Desired Stand Condition
<b>Noncommercial Treatment</b>		
<b>NC1</b>	<b>Noncommercial Fuels Thinning 1</b> With & without prescribed fire. See Table 2.5.	Promotes predominately late development open canopy stands. Predominately single story, variable spaced, healthy, ponderosa pine with limited ladder fuels and areas of high and low canopy coverage.
<b>NC2</b>	<b>Noncommercial Fuels Thinning 2</b> Without prescribed fire	Predominantly late development closed canopy stands. Predominately single story, variable spaced, healthy, ponderosa pine communities with limited ladder fuels and areas of higher stocking densities to promote high canopy coverage for wildlife habitat.
<b>NC3</b>	<b>Noncommercial Fuels Thinning 3</b> Without prescribed fire	Late development open canopy stands. Open grown, predominately single story, variable spaced, healthy, ponderosa pine communities with limited ladder fuels and lower stocking densities to promote low canopy coverage.
<b>NC4</b>	<b>Noncommercial Fuels Thinning 4</b> With & without prescribed fire. See Table 2.5.	Late development open canopy stands. Open grown, predominately single story, variable spaced, healthy, ponderosa pine with limited ladder fuels and lower stocking densities to promote low canopy coverage. Moderate to high resiliency to disturbance effects. Fuel hazard low.
<b>NC5</b>	<b>Noncommercial Fuels Thinning 5</b> With & without prescribed fire. See Table 2.5.	Late development open canopy to late development closed canopy stands. Predominately single story, variable spaced, healthy, ponderosa pine with limited ladder fuels and areas of higher stocking densities to promote high canopy coverage for wildlife habitat.
<b>PCT</b>	<b>Pre-Commercial Thin</b> With & without prescribed fire. See Table 2.5.	Post replacement development stands that will progress into mid open development stands. Open grown, predominately single story, variable spaced, healthy, productive, ponderosa pine communities with limited ladder fuels and lower stocking densities to promote lower canopy coverage.
<b>SCNC</b>	<b>Special Cut Noncommercial</b> Green Ash/Aspen enhancement with prescribed fire	Removes competing ponderosa pine from green ash/aspen stands. Green ash communities with less than 10% ponderosa pine and aspen communities with no ponderosa pine communities.
<b>RXB</b>	<b>Prescribed Fire</b> Prescribed fire without any other hand or mechanical treatment.	Maintain nonforest conditions with limited pine colonization. Late development open canopy stands in the forested stands. Open grown, predominately single story, variable spaced, healthy, ponderosa pine communities with limited ladder fuels and lower stocking densities to promote very low canopy coverage.
<b>NT</b>	<b>No Treatment</b>	Retains multilayered stand conditions for biological diversity.

Most of the commercial harvest would be accomplished via tractor logging and whole tree yarding during the summer under dry soil conditions or in the winter on frozen ground or over snow. Approximately 123 acres of commercial harvest would be cable logged due to the presence of steeper slopes under Alternative A. These sites are not proposed for commercial harvest under Alternatives B and C. Appendix D describes proposed commercial treatment by unit number and alternative. Noncommercial treatments involve hand or mastication thinning

from below, with treatment of fuel loads by a variety of methods including lop and scatter, jackpot burning, or mastication.

## ***Fuel Loading***

Under all of the action alternatives, fuel loads in treatment units within the interior of the BCLMP area would be reduced to a range of three to seven tons per acre. Fine fuel loads (0-3" diameter) would not exceed three tons per acre. Coarse Woody Debris (CWD) in the 3-12"+ diameter range would be retained when available, and at a minimum of four tons per acre. Fuel loads in treatment units adjacent to private land would be reduced to a range of three to five tons per acre. Fine fuel loads would not exceed two tons per acre. CWD would be retained when available, and at a minimum of three tons per acre.

## ***Alternative Comparison***

As discussed in Chapter 1, the DEIS evaluated a Proposed Action and No Action alternatives. Two additional action alternatives were developed for inclusion in the FEIS. The proposed action was identified as Alternative A, and the new alternatives were identified as Alternatives B and C. The No Action Alternative became Alternative D. Appendix A includes maps of all the action alternatives. Large maps are available on the Custer NF web site. Treatment units are detailed by unit number and alternative in Appendix D.

Alternative A (Proposed Action) includes treatments that were previously proposed in the East Otter Environmental Assessment and Whitetail Environmental Assessment. No decision was ever made on the East Otter project, and the Whitetail decision was withdrawn. Since 2008, the two projects were combined for evaluation in an Environmental Impact Statement, and the proposed action was refined in response to public comment and collaboration, and to better address multiple landscape objectives.

Alternative B (Preferred Alternative) was developed to address the issue of potential impacts to big game habitat. This alternative also was responsive to public comment that the road cost of constructing approximately 20 miles of temporary road was too high. In this alternative, the Proposed Action was modified as follows:

- Place permanent seasonal motorized closures on Roads 41338 and 44094 to increase big game security (September 1 to December 1)
- Eliminate approximately 3 miles of temporary road compared to Alternative A
- Approximately 208 acres of commercial treatment under Alternative A were changed to NC4 noncommercial treatment (associated with the reduction of the temporary roads). See Appendix A, Map 7 and Appendix D.

Alternative C was developed to address the issue of potential impacts to the northern goshawk, a Management Indicator Species (MIS) for mature and old growth forest. In this alternative, the Proposed Action was modified as follows:

- Place permanent seasonal motorized closures on Roads 41338 and 44094 to increase big game security (September 1 to December 1)
- Eliminate approximately 12.5 miles of temporary road compared to Alternative A
- Eliminate all treatment in two goshawk post-fledgling family areas (PFAs) within the BCLMP area.
- Eliminate isolated commercial units that resulted from elimination of treatment units in the PFAs.

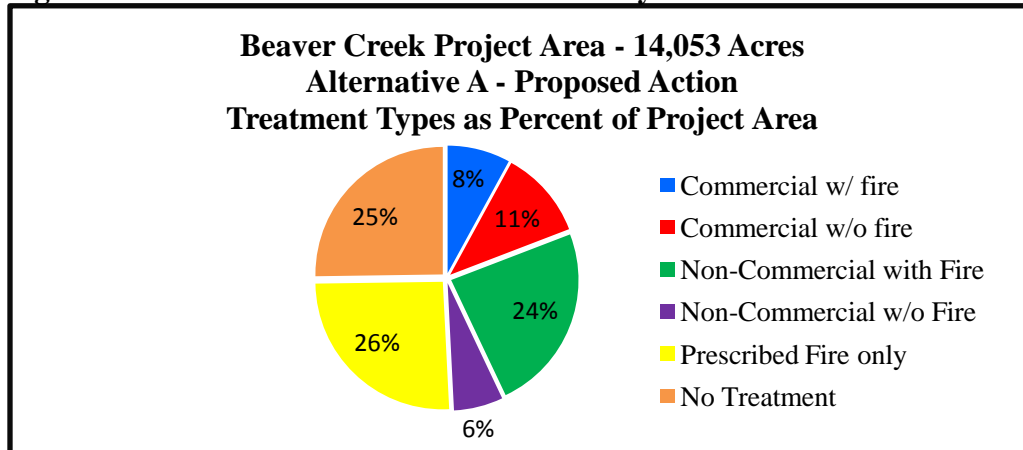
All of the action alternatives incorporate the silvicultural prescriptions described above, and vary primarily by acres treated. Alternatives B and C also include the seasonal motorized road closure to improve big game security. Alternative A proposes the maximum amount of commercial treatment. Alternative B treats the same acreage as Alternative A, but converts 208 acres of commercial treatment to noncommercial. Alternative C treats about 2,500 acres less than A or B. Treatment proposed under Alternatives A, B, and C is summarized below. Refer to Appendix A (maps), B (prescription information) and D (unit tables) for additional information.

**Table 2.2: Treatment Summary by Alternative**

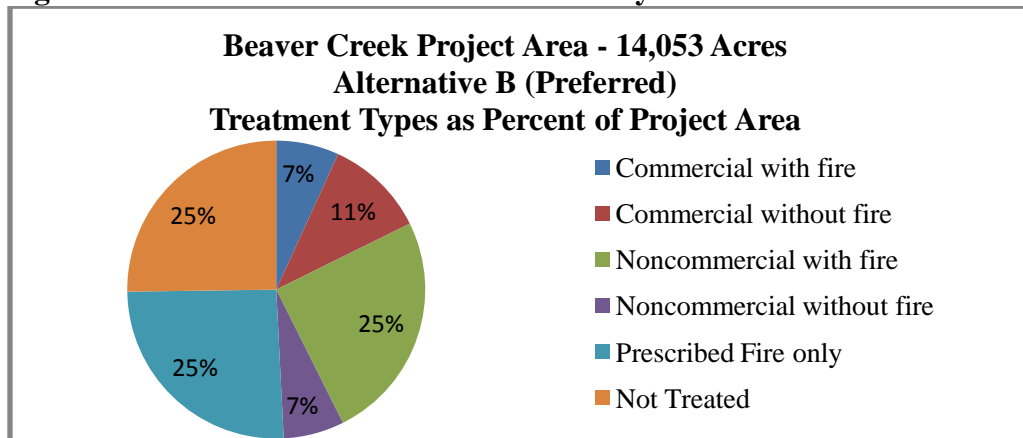
<b>Treatment</b>	<b>Alternative A</b>		<b>Alternative B</b>		<b>Alternative C</b>	
	<b>Acres</b>	<b>Percent</b>	<b>Acres</b>	<b>Percent</b>	<b>Acres</b>	<b>Percent</b>
Commercial with Fire	1,120	8	958	7	872	6
Commercial without Fire	1,574	11	1,528	11	64	0.5
Noncommercial with Fire	3,343	24	3,502	25	3,184	22.5
Noncommercial without fire	877	6	926	7	433	3
Prescribed fire only	3,594	26	3,594	25	3,506	25
<b>Total Treated</b>	<b>10,508</b>		<b>10,508</b>		<b>8,059</b>	
Not Treated	3,545	25	3,545	25	5,994	43
<b>Total Project Area</b>	<b>14,053</b>	<b>100</b>	<b>14,053</b>	<b>100</b>	<b>14,053</b>	<b>100</b>

Acres were calculated from a GIS database, and are an approximate summation of proposed treatment.

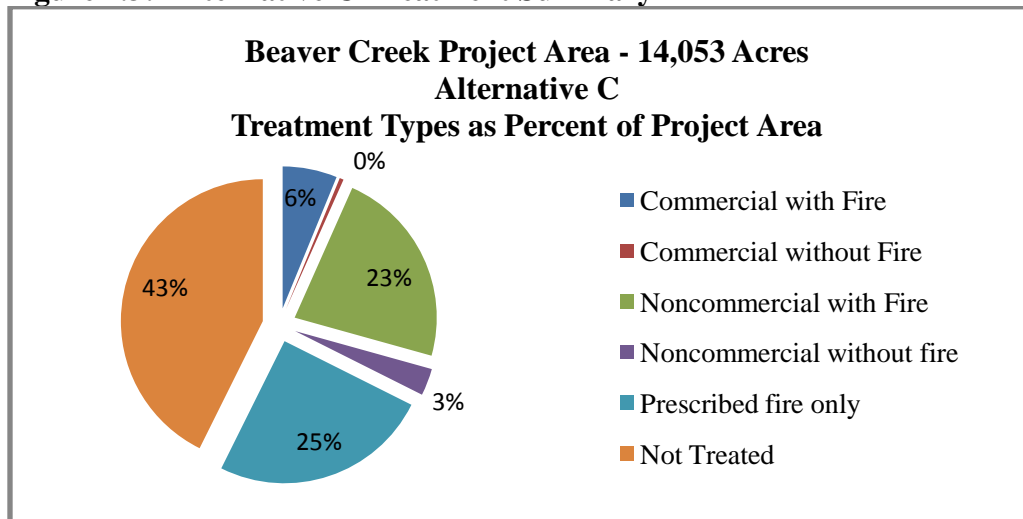
**Figure 2.1: Alternative A Treatment Summary**



**Figure 2.2: Alternative B Treatment Summary**



**Figure 2.3: Alternative C Treatment Summary**



As Table 2.2 and Figures 2.1, 2.2, and 2.3 indicate, Alternatives A and B propose treatment on approximately 75 percent of the project area, while Alternative C proposes treatment on only 57 percent of the project area. The commercial and noncommercial treatments include the following components as shown in Tables 2.3, 2.4 and 2.5:

**Table 2.3: Proposed Treatment by Alternative**

Prescription Code	Alt A Acres	Alt B Acres	Alt C Acres
<b>Commercial</b>			
CT	178	130	106
CT1	1,267	1,238	0
LIB	22	22	22
SC	64	55	50
SH1	229	221	207
ST1	798	684	496
STR	60	60	56
STR1	76	76	0
<b>Subtotal</b>	<b>2,694</b>	<b>2,486</b>	<b>937</b>
<b>Noncommercial</b>			
NC4 / NC3	1,118	1137	1,045
NC5	2,237	2,397	1,736
NC1	587	587	785
NC2	109	128	4
PCT	120	120	0
SCNC	49	59	47
<b>Subtotal</b>	<b>4,220</b>	<b>4,428</b>	<b>3,617</b>
<b>Prescribed Fire Only</b>			
RXB	3,594	3,594	3,506
<b>Total Treated</b>	<b>10,508</b>	<b>10,508</b>	<b>8,060</b>

Acres were calculated from a GIS database, and are an approximate summation of proposed treatment.

**Table 2.4: Summary of Commercial Treatment (with or without Prescribed Fire)**

Code	Alternative A Acres		Alternative B Acres		Alternative C Acres	
	With Fire	Without Fire	With Fire	Without Fire	With Fire	Without Fire
CT	160	18	113	18	106	0
CT1	0	1267	0	1238	0	0
LIB	22	0	22	0	22	0
SC	56	9	46	9	46	4
SH1	206	23	202	19	201	5
ST1	627	171	526	159	448	48
STR	49	10	49	10	49	7

Code	Alternative A Acres		Alternative B Acres		Alternative C Acres	
	With Fire	Without Fire	With Fire	Without Fire	With Fire	Without Fire
STR1	0	76	0	76	0	0
<b>Total</b>	<b>1120</b>	<b>1574</b>	<b>958</b>	<b>1529</b>	<b>872</b>	<b>64</b>

Acres were calculated from a GIS database, and are an approximate summation of proposed treatment.

**Table 2.5: Summary of Noncommercial Treatment  
(hand or mastication thinning and with or without prescribed fire)**

Prescription Code	Alt A Acres				Alt B Acres				Alt C Acres			
	With fire with mastication	Without fire with mastication	With fire with hand thinning	Without fire with hand thinning	With fire with mastication	Without fire with mastication	With fire with hand thinning	Without fire with hand thinning	With fire with mastication	Without fire with mastication	With fire with hand thinning	Without fire with hand thinning
NC1	211	87	213	76	211	87	213	76	228	170	256	131
NC2	0	54	0	55	0	64	0	64	0	1	0	3
NC3	0	38	0	30	0	38	0	30	0	0	0	0
NC4	562	17	462	9	564	22	465	18	564	11	465	6
NC5	864	156	974	243	916	163	1070	248	828	19	863	25
PCT	1	83	6	29	1	83	6	29	0	0	0	0
SCNC	29	0	20	0	37	0	22	0	29	0	18	0
<b>Sub Total</b>	<b>1667</b>	<b>435</b>	<b>1675</b>	<b>443</b>	<b>1730</b>	<b>457</b>	<b>1776</b>	<b>465</b>	<b>1649</b>	<b>201</b>	<b>1602</b>	<b>165</b>

Acres were calculated from a GIS database, and are an approximate summation of proposed treatment.

## Commercial Timber Sale

Table 2.6 below identifies the approximate volume in hundred cubic feet (CCF) of harvested timber that could be sold under contract for each action alternative. In the event that a commercial timber product is not marketable, use of mechanical treatments and prescribed fire would proceed where appropriate and as allocated funding allows.

**Table 2.6: Approximate Commercial Volume by Alternative**

	Alternative A	Alternative B	Alternative C
<b>Volume in CCF</b>	22,495	21,803	9,255

The DEIS indicated that approximately 20,358 hundred cubic feet (CCF) could be sold under Alternative A. This volume was generated by using a combination of the Flewelling Profile Model volume equations 100FW2W122 and 203FW2W122. For the FEIS, the commercial harvest volumes for Alternative A and the new Alternatives B and C were generated by using only the Flewelling Profile Model volume equation 203FW2W122. This was done to get a better representation of the volume for Ponderosa Pine in this part of the Region, as recommended by the R1 Measurement Specialist. The different modeling accounts for the difference in estimated cut volume per acre between Alternative A in the DEIS (20,358 CCF) and Alternative A in the FEIS (22,495 CCF).

## 40+ Acre Openings

Forest Service Manual 2471.1 states that the size of harvest openings created by even-aged silvicultural in the Northern Region will be normally 40 acres or less. Creation of larger openings requires 60-day public review and Regional Forester approval.

For the BCLMP, openings are defined as areas where even-aged silvicultural treatments are proposed on forested ground that removes trees to a residual overstory of less than 25% canopy cover. This applies to the regeneration seed tree seed cuts (ST1) and the shelterwood establishment cuts (SH1).

The Action Alternatives would create several openings larger than 40 acres. These openings are summarized in Table 2.7 below, and displayed on Appendix A, Maps 14, 15, and 16.

**Table 2.7: Openings That Would Be Created Over 40 Acres In Size**

Unit Number	Treatment	Alternative A Acres	Alternatives B & C Acres
12	ST1	58	58
13	SH1	49	49
41	ST1	68	68
42, 44A, 44B, 44C, 44D, 44E, 45A, 45B, 46, 50	SH1 & ST1 combination	151	74*
51	ST1	49	49
52, 53	SH1	70	70
54, 56, 57	ST1	102	102
<b>Total</b>		<b>547</b>	<b>470</b>

\*77 acres in Units 44A, 44B, 44C, 45B, 46, and 50 are converted to noncommercial NCBJ treatment under Alternatives B and C. Canopy cover in these stands would be reduced to 30% (as opposed to < 25%), and are no longer considered part of the large openings.

Acres were calculated from a GIS database, and are an approximate summation of proposed treatment.

## ***Purpose of Openings***

Disturbances such as fire, insect, disease, and weather create mosaics of forest composition and structure within and among stands across landscapes (Ryan, 2010). These mosaics occur over relatively small spatial scales to rather large exceeding hundreds of acres (Ryan, 2010). To effectively reduce the risk of wildland fires, fuel treatments need to be implemented on large areas (Ryan, 2010). Treatments that alter vegetation to favor low intensity fires must consider the spatial arrangement of fuel structures to alter wildfire behavior. Treating small or isolated stands without regard to the broader landscape would most likely be ineffective in reducing the extent and severity of large disturbances such as wildfire (Graham, Mathews, 2010). Alternative A (Proposed Action) and Alternatives B (Preferred Alternative) and C were designed with multiple treatment types to create a diversity of habitat and mosaics across the landscape.

The location of two goshawk Post Fledging Areas (PFAs), and proposed treatment within these areas were key to the development of treatments units exceeding 40 acres in size. Within the PFA boundaries, the proposed treatment under Alternatives A and B is a commercial thin from below to an average minimum stand canopy cover of 50 percent in the 5-inch and larger size class (CT-1). The prescription also calls for thinning out stagnant, unhealthy, and snow/wind damaged understory. While this prescription treats surface and ladder fuels (two legs of the fire triangle), it does not reduce canopy cover to less than 40 percent, and the treated areas remain at risk for stand replacement fire. No treatment is proposed in the PFAs under Alternative C, and the areas also remain at risk for stand replacement fire.

The openings over 40 acres were strategically placed on the landscape to reduce the risk of a stand replacement / crown fire from entering the goshawk PFAs. Currently on the south and east side of the project area, there is a continuous track of canopy cover exceeding 40 percent on average. According to the FRCC analysis completed for this project, 75 percent of the forested stands are in the closed canopy late development structural class. These areas are susceptible to a stand replacement fire. Greater structural diversity across the landscape would result in low or mixed severity fires. The proposed seed tree and shelterwood treatments greater than 40 acres in size would create a diversity of stand development stages that break up fuel continuity, reduce the potential for stand replacement fire, and increase the landscape's resiliency to wildfire disturbance, including the two Goshawk PFAs.

## ***Duration of Openings***

Based upon monitoring results from similar past treatments on the Ashland Ranger District, these sites are expected to meet the Custer National Forest's stocking standards. For suitable sites, the silviculture prescriptions would result in an adequately restocked stand with at least 80 percent of the treated areas containing approximately 100 to 200 trees per acre within five years from harvest or site preparation. For unsuitable sites, the silviculture prescriptions would result in an adequately restocked stand with at least 25 to 50 percent of the area containing 50 to 100 trees per acre within five years from harvest or site preparation.

Past monitoring and modeling of regeneration harvests has shown that these sites would have vegetation greater than 10 feet tall, and average more than 125 trees per acre within 15 to 25 years.

## ***Prescribed Fire***

Alternatives A, B, and C propose prescribed fire to achieve desired fuel conditions either in conjunction with mechanical treatment, or as a stand along treatment (see Appendix B and Maps 1, 5, and 10 in Appendix A of this FEIS).

Because existing stand conditions have developed without natural fire for a long period of time, a multiple entry approach may be used with all treatments. This ‘two-stage’ entry is especially true with prescribed under burning in order to manage heat intensity, fire spread and be within acceptable residual stand mortality objectives. The first prescribed fire entry would primarily be for disposal of piled and/or concentrated fuels. Some spread or “managed creep” beyond the piled/concentrated area is still likely depending on project constraints. The second prescribed fire entry would be an objective of a more extensive low heat intensity surface spreading fire throughout at least 70 – 80 % of the stand.

Burn parameters described in Appendix B and Table 2.8 below. Table 2.8 lists prescribed fire ratios for different treatment types (for example: 70% burned to 30% unburned for a broadcast burn). These ratios of burned to unburned areas take into account that fire burns unevenly across the landscape, creating a mosaic of burned and unburned areas. The fuels specialists on the Forest base the ratios specified on past experience and professional judgment.

**Table 2.8: Prescribed Fire Parameters by Treatment Type**

Treatment Type	Prescribed Fire Treatment	Approximate Ratio of Ground Area Burned: Unburned	Management Strategy to Achieve Prescribed fire Goals		
			% of Area in Fire Created Canopy Openings	Average Fire Created Canopy Opening Size in Acres	% Fire Created Overstory Tree Mortality
Non Commercial, Mechanical/Non Mechanical Activity with Prescribed Fire					
NCBJ1	Broadcast Burn	70:30	5 to 10%	0.5 to 2.0	≤ 15
PCT	Under Burn	70:30	≤ 3	0.5 to 1.0	≤ 10
SCNC	Jackpot Burn	30:70	≤ 3	0.5 to 2.0	≤ 10
NCBB	Broadcast Burn	70:30	5 to 10%	0.5 to 2.0	≤ 15
NCBJ	Broadcast Burn	70:30	5 to 10%	0.5 to 2.0	≤ 15
Non Commercial, Mechanical/Non Mechanical Activity without Prescribed Fire					
NCBJ2	NO PRESCRIBED FIRE				
NCBJ3	NO PRESCRIBED FIRE				
Commercial Activity No Prescribed Fire Treatments					
CT1	NO PRESCRIBED FIRE				
STR1	NO PRESCRIBED FIRE				
Commercial Activity With and Without Prescribed Fire					
CT	Broadcast Burn	70:30	≤ 3	.5	≤ 10
ST1	Under Burn <sup>1</sup>	90:10	≤ 3	.5	≤ 10
SH1	Under Burn <sup>1</sup>	90:10	≤ 3	.5	≤ 10
STR	Under Burn	60:40	< 3	0.5 to 1.0	< 10

Treatment Type	Prescribed Fire Treatment	Approximate Ratio of Ground Area Burned: Unburned	Management Strategy to Achieve Prescribed fire Goals		
			% of Area in Fire Created Canopy Openings	Average Fire Created Canopy Opening Size in Acres	% Fire Created Overstory Tree Mortality
Commercial Activity With and Without Prescribed Fire					
LIB	Under Burn	60:40	≤ 3	0.5 to 1.0	≤ 10
SC	Jackpot Burn	30:70	≤ 3	0.5 to 2.0	≤ 10
Prescribed Fire Treatments					
RXB	Broadcast Burn	70:30	N/A	N/A	N/A

<sup>1</sup>This burn is for site preparation; see design criteria (Project Record, Appendix V) for pullback of fuels from seed trees for protection from direct and indirect fire effects.

## Post Treatment Regeneration Certification

Forest Service policy requires all forested lands in the National Forest system to be maintained in appropriate forest cover with the species of trees, degree of stocking, rate of growth, and conditions of stand designed to secure the maximum benefits of multiple use sustained yield management. Target stand and desired conditions for all action alternatives maintain forest cover to meet the multiple standards, goals and objectives in the Forest Plan.

Proposed regeneration seed tree and shelterwood seed tree harvests, and openings created by prescribed fire are planned to be regenerated in five years. The minimum trees per acre and percent stocked area depend upon habitat type and suitability, which is displayed in Tables 2.9 and 2.10 below.

**Table 2.9: Minimum Trees per Acre (TPA) and Percent Stocked Area by Suitability for Certification of Regeneration.**

Habitat Type <sup>1</sup>	Aspect	TPA	% Stocked Area <sup>2</sup>	Suitability
110, 130	All	15 - 25	15 - 25	Unsuitable
140, 141	SW, W, S, SE	15 - 25	15 - 25	Unsuitable
140, 141	NW, N, N, NE, E	50 - 100	25 - 50	Unsuitable
170, 171, 172, 180, 181, 182	SW, W, S, SE	50 - 100	25 - 50	Unsuitable or Suitable
170, 171, 172, 180, 181, 182	NW, N, N, NE, E	100 - 200	80% +	Suitable

<sup>1</sup>Habitat Type Codes for Certification of Stocking for Regeneration Activities as described by Pfister *et al* 1977.

<sup>2</sup>Percent capable growing area stocked to the minimum TPA for certification listed to the left.

**Table 2.10: Description of Pfister et al 1977 Habitat Types**

<b>Code</b>	<b>Habitat Type</b>
110	<i>Pinus ponderosa</i> / <i>Andropogon</i>
130	<i>Pinus ponderosa</i> / <i>Agropyron spicatum</i>
140 / 141	<i>Pinus ponderosa</i> / <i>Festuca idahoensis</i>
170	<i>Pinus ponderosa</i> / <i>Symphoricarpos albus</i>
171	<i>Pinus ponderosa</i> / <i>Symphoricarpos albus</i> <i>Berberis repens</i> phase
172	<i>Pinus ponderosa</i> / <i>Symphoricarpos albus</i> <i>Symphoricarpos albus</i> phase
180	<i>Pinus ponderosa</i> / <i>Prunus virginiana</i>
181	<i>Pinus ponderosa</i> / <i>Prunus virginiana</i> <i>Shepherdia Canadensis</i> phase
182	<i>Pinus ponderosa</i> / <i>Prunus virginiana</i> <i>Prunus virginiana</i> phase

Seed trees would be protected as needed prior to prescribed burning by pulling fuel accumulation away from bole of tree (refer to mitigation table – Table 2.14). These time frames and stocking objectives would be documented in the detailed silvicultural prescription prior to implementation. All regeneration and seed tree harvests, and small openings created during prescribed fire implementation would be monitored (1<sup>st</sup>, 3<sup>rd</sup>, and 5<sup>th</sup> year) to ensure forest cover reestablishment in accordance with monitoring requirements in the Forest Plan (item E2).

## **B. ROAD MANAGEMENT ACTIVITIES**

### **Summary**

Temporary road construction, road maintenance, and road reconstruction is required to complete ground based commercial timber harvest under the action alternatives. All roads used to facilitate commercial operations including equipment transport, log hauling, and access would receive either reconstruction, pre-haul maintenance, haul maintenance, post-haul maintenance, or a combination thereof. The amount of temporary road construction, road maintenance, and road reconstruction varies by alternative, and is summarized in Table 2.11 below. Road and Trail maps of each alternative are included in Appendix A (Maps 4, 9, and 13). Specific information concerning the identification and location of proposed road and trail work on existing roads and trails for the action alternatives is summarized in Table 2.13 on pages 2-17 to 2-19.

**Table 2.11: Summary of Roads and Trails Activity to Implement Action Alternatives**

<b>Roads / Trails</b>	<b>Alternative A Miles</b>	<b>Alternative B Miles</b>	<b>Alternative C Miles</b>
Temporary Road – Construction/Obliteration	18.2	15.2	5.7
Existing Road - Maintenance	16.6	14.2	8.0
Existing Road – Reconstruction &	12.8	12.8	8.9

<b>Roads / Trails</b>	<b>Alternative A Miles</b>	<b>Alternative B Miles</b>	<b>Alternative C Miles</b>
maintenance			
Trails to be converted to maintenance level 2 roads during timber sale. To be returned to trail upon completion.	3.7	1.6	0.7
Maintenance Level 1 roads to be converted to Maintenance level 2 roads during timber sale; To be returned to level 1 upon completion.	5.6	5.6	1.9
Seasonal Motorized Restriction (September 1 – December 1)	No	Yes Road # 41338 & 44094	Yes Road #41338 & 44094

Miles listed are approximate.

### ***Temporary Roads***

Temporary roads would be closed and obliterated after management activities are completed. Please refer to Appendix A, Maps 4, 9, and 13 for a location of proposed temporary roads under each alternative. Closure of temporary roads and obliteration would occur using a variety of methods such as scarifying/ripping in a random pattern (not just parallel to the roadbed), restoring to contour if a cut-slope exists, scattering of debris (where available), seeding (with native vegetation), signing, obstructing with boulders, stumps, or logs, and re-seeding disturbed areas with a noxious-weed free native seed mix appropriate for site conditions. Entrances to some of these roads would be obliterated for a minimum distance of 100 feet or as needed to a length the road would not be seen from the open system road. Signing would be installed as needed to keep vehicle traffic from using the route. Signing needs would be addressed as rehabilitation activities are completed.

### ***Road Maintenance***

Road Maintenance activities may include where applicable: surface blading, dust abatement, slide removal and slump repair, surfacing repair, shoulder maintenance, ditch cleaning, maintenance of drainage structures, clearing roadway vegetation, cutting roadside vegetation, seeding, maintenance of miscellaneous structures, and maintenance of traffic signs. Road reconstruction may include widening roads, reconstructing existing turnouts, constructing new turnouts, road realignments to reduce road gradient, road realignments to protect heritage resources, installing road drainage features, and surfacing to accommodate project implementation while protecting forest resources. Road re-alignment activities would include some incidental vegetation and tree removal. Short road segments or road junctions abandoned due to realignments would be decommissioned by obliteration as described below.

### ***Changes to Route Classification***

As identified in Table 2.11, approximately 3.7 (Alt A), 1.6 (Alt B), and 0.7 (Alt C) miles of motorized trails needed would be converted to Maintenance Level 2 roads for timber hauling during sale activities. Approximately 5.6 (Alt A and B) and 1.9 (Alt C) miles of Maintenance Level 1 roads would be converted to Maintenance Level 2 roads for timber hauling during sale

activities. (A Maintenance Level 1 road is closed to motorized uses, and receives basic custodial maintenance to prevent damage to adjacent resources, and to perpetuate the road for future resource management needs. A Maintenance Level 2 road is assigned to roads open for use by high clearance vehicles, and is suitable for log hauling. Please refer to the glossary for complete definitions.) Upon completion of timber sale activities the roads would be converted back to their prior status as follows:

- The reconstructed road templates, including road junction improvements, would be retained in a manner that facilitates drainage.
- The road template would be lightly scarified and seeded to facilitate reestablishment of vegetation.
- Physical barriers such as gates, rocks, and logs or signs may be placed at the entrances of motorized trails open only to and maintained for motor vehicles less than 50 inches in width.

### ***Road Obliteration***

The BCLMP area includes seven short road segments totaling approximately 2.1 miles that were recommended for decommissioning either in the Ashland Travel Management decision (2009a) and/or by the Forest Hydrologist to improve watershed health. Since these roads are located within the BCLMP boundary, road decommissioning was incorporated into the action alternatives. The routes identified in Table 2.12 below would be closed/obliterated as described in the Temporary Road discussion above. Road obliteration would reduce road densities within the Upper Beaver and Little Pumpkin Creek watershed, thereby reducing the risk of cumulative watershed effects over the long-term.

**Table 2.12: Road Obliteration**

Road	Miles	Notes
41338A	0.2	Unauthorized Route. Obliterate as part of timber sale.
41338B	0.3	Unauthorized Route. Obliterate as separate contract.
41338C	0.5	Unauthorized Route. Obliterate as separate contract.
44235	0.3	Unauthorized Route. Obliterate as separate contract.
4777B1	0.3	Maintenance Level 1 route. Obliterate as separate contract.
4777B1A	0.3	Unauthorized Route. Obliterate as separate contract.
Un-named route	0.2	Unauthorized Route located at the Y intersection with Route 4427. Obliterate as separate contract.
Total	2.1	

Miles listed are approximate.

### ***Other Road Activities***

Route 4409 is a Maintenance Level 2 road in the BCLMP area (approx. 2.6 miles). A decision was made to reconstruct this road in a previous NEPA decision, but the reconstruction has not been completed to date. A contract was recently awarded to reconstruct/realign approximately 0.3 miles of this route during the summer of 2011 near the junction with the East Otter Creek

Road (Route 4423). The remainder of the road may be reconstructed as part of a timber sale on the BCLMP under Alternatives A and B, or under separate contract.

In addition, the Federal Highway Administration recently awarded a contract to reconstruct East Otter Creek Road (Route 4423) starting April 1, 2011. The contract specifies that the work must be completed in two seasons. Reconstruction of Route 4409 and East Otter Creek Road would improve road conditions for ground based commercial timber harvest under the action alternatives.

### ***Road and Trail Activity by Route Number and Alternative***

A complete list of road and trail activities is detailed by route number and alternative in Table 2.13 below.

Note: Table 2.13 indicates that approximately 0.1 miles of Route 4777B2 would be converted from an unauthorized route to a Maintenance Level 1 road post treatment under Alternatives A and B. While this 0.1-mile is added as a system road, it is offset by the 2.1 miles of road that would be decommissioned, resulting in a net reduction in approximately 2 miles of road in the BCLMP area.

**Table 2.13: Roads and Trails: Route Classification and Proposed Activity by Alternative**

Route #	Approx. Length (miles)	Current Route Class-ification*	Timber Sale Route Class-ification*	Post Timber Sale Route Class-ification*	Activity type	Alt A	Alt B	Alt C	Comments
4133	1.6	ML3 Road	ML3 Road	ML3 Road	M	X	X	X	
4133	0.1	ML3 Road	ML3 Road	ML3 Road	R	X	X	X	Construct 3 indivisible turnouts @ MP 0.215, 0.295, and 0.343 as measured junction with E Fork Otter Creek Road.
41334	0.6	Trail - All OHV	ML 2 Road	Trail - All OHV	M	X			Convert to a road during timber sale.
41338	0.6	Trail <50"	ML 2 Road	Trail <50"	R	X	X	X	Convert to a road during timber sale. Realign junction with Road 4133 to provide a T-intersection and obliterate existing road approach except where historic ditch crosses road. Install a new gate on fence at new intersection. Provide a 12 foot finished road width.
41338A	0.2	Un-authorized	Temporary Road	Temporary Road	O	X	X	X	Obliterate as part of timber sale.
41338B	0.3	Unauthorized		De-commission	O	X	X	X	Obliterate outside timber sale contract.
41338C	0.5	Unauthorized		Decommission	O	X	X	X	Obliterate outside timber sale contract.
41339	0.3	ML 2 Road, Admin use only.	ML 2 Road	ML 2 Road, Admin use only.	R	X	X		Existing road is in a drainage bottom with grades >20%. Realign road out of drainage bottom. Spot surface steep grades.
41339A	0.8	ML 1 Road	ML 2 Road	ML 1 Road	M	X	X		
4409	2.6	ML 2 Road	ML 2 Road	ML 2 Road	R	X	X		NEPA already completed. Contract recently awarded for 0.3 miles of reconstruction/realignment near junction with East Otter Road. Reconstruction of remaining segment may be completed through timber sale or under a separate contract.
44093	0.1	ML 2 Road, Admin. use only.	ML 2 Road	ML 2 Road, Admin use only.	M	X	X		
44094	1.9	Trail <50"	ML 2 Road	Trail <50"	M	X			Convert to a road during timber sale.
44094	0.5	Trail <50"	ML 2 Road	Trail <50"			X		Convert to a road during timber sale.
4422	0.1	ML 2 Road, Admin use	ML 2 Road	ML 2 Road, Admin use only.	R	X	X		Realign 0.1 miles at junction w/ 4427 to avoid steep grade. Avoid range pipeline.

Route #	Approx. Length (miles)	Current Route Class-ification*	Timber Sale Route Class-ification*	Post Timber Sale Route Class-ification*	Activity type	Alt A	Alt B	Alt C	Comments
		only.							
4422	1.5	ML 2 Road, Admin use only.	ML 2 Road	ML 2 Road, Admin use only.	M	X	X		Maintain road past junction realignment. Remain on existing road template - do not disturb old cabin site.
4423		Federal Highway			R				East Otter Creek Road will be reconstructed through a contract awarded by the Federal Highway Administration during 2011-2012.
44235	0.3	Unauthorized		De-commission	O	X	X	X	Obliterate outside timber sale contract.
44236	0.4	Trail – All OHV	ML 2 Road	Trail – All OHV	M	X	X		
44237	0.8	ML 1 / 2 Road	ML 2 Road	ML 1 / 2 Road	R	X	X		Realign portion of road to avoid heritage property. Provide 12-foot width finished road template.
44237A	0.3	ML 2 Road, Admin use only.	ML 2 Road	ML 2 Road, Admin use only.	M	X	X		
4427	1.8	ML 2 Road	ML 2 Road	ML 2 Road	R	X	X	X	From Junction with E Fork Otter Creek Road to the Junction with Road 44271. This portion of road would receive either heavy maintenance or light reconstruction.
4427	3.0	ML 2 Road	ML 2 Road	ML 2 Road	R	X	X	X	From Junction with Road 44271 to Road 4769. Realign junction with Road 4769 to provide adequate curve radius, provide additional turnouts, replace a gate with cattleguard, provide spot surfacing, provide cross drains, remove roadside vegetation, etc.
44271	0.4	ML 2 Road, Admin use only.	ML 2 Road	ML 2 Road, Admin use only.	M	X	X		
44272	0.9	ML 2 Road, Admin use only.	ML 2 Road	ML 2 Road, Admin use only.	M	X	X	X	
44273	0.6	ML 1 Road	ML 2 Road	ML 1 Road	M	X	X	X	
4510	1.1	ML 1 Road	ML 2 Road	ML 1 Road	M	X	X		

Route #	Approx. Length (miles)	Current Route Class-ification*	Timber Sale Route Class-ification*	Post Timber Sale Route Class-ification*	Activity type	Alt A	Alt B	Alt C	Comments
4512	1.1	ML 2 Road, Admin use only.	ML 2 Road	ML 2 Road, Admin use only.	M	X	X	X	
4769	3.5	ML 2 Road	ML 2 Road	ML 2 Road	M	X	X	X	Realign junction with Road 4427 to provide adequate curve radius, provide additional turnouts, maintain miscellaneous structures, provide spot surfacing, provide cross drains, remove roadside vegetation, etc.
47695	0.9	ML 1 Road	ML 2 Road	ML 1 Road	M	X	X	X	
47696	0.2	Trail – All OHV	ML 2 Road	Trail – All OHV	M	X	X	X	
47699	0.8	ML 2 Road, Admin use only.	ML 2 Road	ML 2 Road, Admin use only.	M	X	X	X	
4777	1.5	ML 2 Road	ML 2 Road	ML 2 Road	M	X	X	X	
4777B	0.2	ML 3 Road	ML 3 Road	ML 3 Road	M	X	X		
4777B1	0.9	ML 1 Road	ML 2 Road	ML 1 Road	M	X	X		
4777B1	0.3	ML 1 Road	ML 1 Road	Decommission	O	X	X	X	Obliterate 1/2 mile of road beyond vegetation treatment area after timber sale
4777B1 A	0.3	Unauthorized		Decommission	O	X	X	X	Obliterate after timber sale or as other funding allows.
4777B2	0.1	Unauthorized	ML 2 Road	ML 1 Road	M	X	X		
47776	0.5	ML 1 Road	ML 2 Road	ML 1 Road	M	X	X	X	
Unauth orized route	0.2	Unauthorized		Decommission	O	X	X	X	Decommission Y-intersections with Road 4427. Obliterate outside timber sale contract

## C. FEATURES COMMON TO ALL ACTION ALTERNATIVES

### *Design Criteria & Mitigation*

The Forest Service developed the design features and mitigation measures listed in Table 2.14, which are included as part of all action alternatives. NEPA defines mitigation to include: (a) avoiding impacts; (b) minimizing impacts by limiting the magnitude or degree; (c) rectifying the impact by repairing, rehabilitating, or restoring; and (d) reducing or eliminating impacts over time by preservation and maintenance operations during the life of the action. These design features and mitigations are intended to reduce or mitigate impacts and are an integral part of the Proposed Action.

**Table 2.14: Design Features and Mitigation Included in the Proposed Action.**

No.	Resource / Concern	Action Alternatives Design Features And Mitigation
1	Heritage Resources	<p>Heritage specialists will review all areas with potential ground-disturbing activities to assure compliance with applicable heritage law, regulation, and policy. Based on review, completion of consultation with the Montana State Historic Preservation Office (SHPO) may be required at some heritage sites prior to ground disturbing work occurring.</p> <p>The Forest Archaeologist shall be notified (24 hours) prior to conducting treatments at known heritage sites in order to monitor all approved treatment activities.</p> <p>If any new actions are planned that are not specifically identified in the proposed project, an archaeological assessment would be required. The assessment may find that additional cultural resource surveys may be needed.</p> <p>All personnel associated with the operations under this FEIS must be informed that any historic or prehistoric site would not be disturbed, damaged, destroyed, moved, or removed. If, in connection with operations under this decision, any historic or prehistoric resources are encountered, activities must cease in the vicinity of the find and the District Ranger and Forest Archaeologist notified. Plans designed to avoid or reduce further disturbance or to mitigate existing disturbance will be formulated in consultation with the MT SHPO, the Northern Cheyenne Tribe and the Forest Service. The discovery must be protected until notified in writing to proceed by the authorized officer (see 36 CFR 800.100, 112: 43 CFR 10.4).</p>
2	Range	<p>Fuels and timber staff will coordinate with District range staff to reduce effects to the grazing permittees and the management of the allotments. Locations of range improvements in the areas where activities will be occurring will be identified to insure the protection of the structures. Allotments affected by prescribed burning are in pasture systems that would allow deferment to unburned areas. Other tools (e.g. electric fencing, herding and salting) are available if greater lengths of time are needed for deferment in burned areas for plant recovery.</p>
3	Noxious Weed Spread	<p>Noxious weed surveys and any necessary treatment will be accomplished one year post-project on all open and closed system and temporary roads, landings, and burn pile sites affected by the project activities, as funding is available.</p> <p>Applicable noxious weed Best Management Practices (BMPs) will be applied as specified in the Custer National Forest Weed Management Final Environmental Impact Statement and Record of Decision (USDA 2006a) and Forest Service Manual 2080 (USDA 2001). Weed BMPs include:</p> <p>For prescribed fire:</p> <ul style="list-style-type: none"> <li>• Vehicles that are used during the prescribed burn will be washed before they come to the BCLMP area. This will ensure seeds from other areas are not brought into the BCLMP area.</li> <li>• Vehicles will not be staged in known weeds infestations.</li> </ul>

No.	Resource / Concern	Action Alternatives Design Features And Mitigation
		<ul style="list-style-type: none"> <li>During prescribed burning, personnel will be asked to avoid existing weed infestation as much as possible.</li> </ul> <p>For all mechanical treatments:</p> <ul style="list-style-type: none"> <li>Pressure-wash all off-road equipment used in project activities prior to coming onto the BCLMP area or onto National Forest lands. The same equipment will be cleaned (washed) prior to moving from an infected unit to an un-infected unit within the BCLMP area.</li> <li>Minimize the creation of sites suitable for weed establishment. Re-vegetate bare soil as described in the Roads (3) (a), (b), (c) in Forest Service Manual 2080.</li> <li>Any gravel or other aggregate being used for road surfacing and/or fill will come from an approved and inspected weed seed free source.</li> </ul> <p>Proposed temporary road #58 located in T2 S, R 46 E, Section 25 has a known spotted knapweed infestation along at least half of its length (about 5.5 acres). If this temporary route is to be used, the following design features would be applied:</p> <ul style="list-style-type: none"> <li>Timing of mechanical/timber activity: Use this area last to decrease the chance of starting new infestations by: 1) increasing the time allowed to chemically treat the area to reduce the infestation, and 2) reducing the chance that equipment could become contaminated and move the seeds to other areas in the BCLMP area were the seeds could start new infestations.</li> <li>Equipment must be washed before leaving this site to ensure there is no contamination. A noxious weed inspector will be on site if equipment is to be moved off-site.</li> <li>Scrape the top 2 or 3 inches of the road when it is bladed, and windrowed the soil so that any potential seeds will be concentrated in the windrow and not on the road surface.</li> <li>Spotted knapweed must be chemically treated prior to use to ensure weed seed production is minimized prior to use of the route for this project;</li> <li>This route must be chemically treated when work and use of route has been completed;</li> <li>Upon decommissioning of route, as part of route obliteration, the route must be seeded with competitive native seed mix. Broadcast seeding is best when done in late fall prior to snowfall.</li> </ul>
4	Unauthorized Motorized Use	Entrances to temporary roads will be obliterated as described above (page 2-14) under “Road Management activities.” Motorized trails temporarily utilized as roads during project implementation will be reclaimed as described above under “Road Management activities”
5	Reforestation In Treatment Units	Ensure every treatment unit receiving a regeneration harvest on suitable lands will meet or surpass stocking guidelines and certification standards (Table 3) within 5 years. Large openings created by prescribed burning on suitable lands will be monitored to ensure restocking. To protect seed trees, fuel accumulation (woody debris and duff) will be pulled back as needed from designated seed trees prior to prescribed burning in all SH1 and ST1 units.
6	Pine Engraver Infestation Susceptibility	Where all proposed commercial and non commercial thinning activities occur, when treating 3 inches and larger activity slash on site, lop into small pieces to expose to sunlight to dry it out or do not create slash from January through July making it less suitable for beetle colonization. Activity fuel piles should be a minimum of 20 feet wide and 10 feet deep to attract emerging beetles deeper into piles. Minimize logging damage to leave trees and avoid scorching leave trees when burning activity fuel piles to prevent population buildup and subsequent tree killing.
7	Water and Soil Quality	<p>Apply State of Montana Best Management Practices for Forestry (DNRC 2002) and Forest Service Soil and Water Conservation Practices (Appendix C).</p> <p>Comply with State of Montana Streamside Management Zone requirements (ARM 2009). Where possible, avoid locating landings and skid trails in the bottom of dry, vegetated drainages that do not fall under the SMZ rules.</p> <p>During prescribed fires, ignition will not occur in riparian areas, but fire would be allowed to back</p>

No.	Resource / Concern	Action Alternatives Design Features And Mitigation
		<p>down into these areas.</p> <p>Timber harvest equipment operation areas, such as corridors, skid trails, and log landings, will be located in a manner that minimizes disturbance and impact to the ground.</p> <p>Locations for new temporary roads and landings will be chosen to minimize steep slopes, minimize water quality impacts, and limit hazards for road building.</p> <p>Consult with Forest Soil Scientist or Hydrologist before approving temporary road or skid trail locations in areas displaying evidence of old rotational slumps.</p> <p>Site reclamation and monitoring of skid trails, temporary roads, and log-landings will be required.</p> <p>Retain specified amounts of woody debris in treatment units (Appendix B) to ensure future soil productivity.</p> <p>Operate when soils are free of excess moisture (not wet), or frozen. Forest Service personnel would determine when conditions are adequate for operations.</p> <p>Vehicle traffic and equipment operation will be restricted from use on system and temporary roads during wet periods.</p>
8	Goshawk	<p>Maintain habitat specific for Northern goshawk (e.g., crown cover, snags, interlocking tree crown patches, Reynolds et al., 1992, pg. 21-30) over the long term; following the Northern Goshawk Northern Region Overview (Tidwell 2007: Brewer et al 2009) and Custer Forest Plan goals and objectives (USDA 1986, p.18). Retain pockets of uneven aged forest containing small trees in CT1 treatment units (approx. 2-40 trees/mean 6-8 in 1-2 acre patches on 5-15% (avg. 10%) of the treatment unit.</p> <p>If an active goshawk nest is discovered within a stand prior to or during treatment activities, work should be halted and the wildlife biologist notified immediately to determine steps to resolve the situation and maintain habitat and minimize human disturbance. Management activities within ¼ mile of any known goshawk nest will be restricted from March 1 through August 31 to reduce potential human disturbance during the breeding – nesting period. The ¼ mile buffer zone is approximately 125 acres. An exception may be made if surveys confirm that goshawks are not nesting or within the area. A wildlife biologist may fit the buffer zone polygon to fit the topography or existing vegetation to best reduce potential human disturbance around the nest.</p>
9	Aspen Habitat	<p>Within the proposed treatment units, treat existing aspen clones to remove all ponderosa pine trees to an average spacing of 60 feet within two mature tree heights approximately 120 ft. out from the perimeter of aspens stands, where feasible, to maintain habitat diversity. A wildlife biologist shall review and evaluate any aspen treatment within goshawk nest stands prior to implementation.</p>
11	Primary and Secondary Cavity/Snag Users	<p>Design units, silvicultural prescriptions, and burn plans to insure snags are retained on the landscape over time to maintain habitat for cavity / snag dependent species. As documented through field surveys, the BCLMP area supports a high number of snags, averaging 22.5 snags per acre. Retain existing snags at locations greater than 75 feet from roads and/or private property, and where they are not a safety hazard during project implementation. At a minimum, retain an average of at least 2 snags per acre where available, that are greater than or equal to 17” diameter (Thomas et al. 1979). If 17” trees are unavailable, retain the largest snags available. At a minimum, retain an average of 1 to 2 snag replacement trees per acre &gt; 20 inches dbh (or largest available if none present &gt;20”) where they exist or where trees have the potential to grow and become snags (USDA 2000a. Northern Region Snag Management Protocol, P. 6-7). (Note - There are no identified snag management indicator species (MIS) / goals / standards in the Custer Forest Plan.)</p>
12	Woody Draws	<p>Outside nest and goshawk PFA areas, selectively slash non-commercial pine saplings to maintain deciduous species in woody draw habitats.</p>

No.	Resource / Concern	Action Alternatives Design Features And Mitigation
		<p>Inside the woody draw boundary, maintain approximately 10% of the ponderosa pine tree component where available. Consider selectively falling mature trees to block cattle trails within woody draws.</p> <p>In key identified wildlife travel corridors along riparian and woody draw bottoms where healthy, vigorous understory pine thickets occur, limited thinning will occur to promote 1 to 2 acre patches of big game security cover and travel corridors.</p>
13	Sagebrush Habitat	<p>Avoid burning stands of big sagebrush greater than 1 acre and with <math>\geq 10\%</math> canopy cover within a grassland setting (inclusive of most Brewer's Sparrow territories, Rotenberry et al. 1999, P. 8). This is not meant to include scattered big sagebrush plants along the ponderosa pine forest edge or areas of silver sagebrush. Silver sagebrush is scattered throughout the BCLMP area and sprouts after burning; big sagebrush stands regenerate slowly from seed.</p>
14	Prairie Dogs	<p>Active and inactive prairie dog towns shall be protected with a 100-foot buffer. All temporary roads, prescribed fire, heavy equipment and vehicle parking shall be setback 100 feet from any active or inactive prairie dog town. No road widening or improvement shall occur on sections of road that bisect active or inactive prairie dog towns within 100 feet of the town. Logging related vehicles shall be confined to roadways where existing roads bisect prairie dog towns.</p>
15	Big Game Security	<p>Based on recommendations from Hillis et al. 1991 and MT Fish, Wildlife and Parks (2011), manage for <math>\geq 30\%</math> big game (includes black bears and mountain lions) security areas that includes forested and non-forested habitat. Provide security areas that are more than 0.50 miles from an open motorized road and at least 250 acres in size. To increase these security areas based on road density, implement seasonal motorized use closures from September 1 to December 1 on Route Numbers 41338 and 44094 that are trails currently open to vehicles 50 inches or less in width (Alternatives B and C only). Manage for forested stands with <math>\geq 40\%</math> canopy cover well distributed across the project area.</p> <p>Wintering ungulates and fawning deer or calving elk should not be displaced by the project treatments. If ungulates are using a treatment area as winter range or for rearing fawns or calves, coordinate options with the District wildlife biologist to work in other areas until the ungulates disperse naturally from the area.</p> <p>Outside nest and goshawk PFA areas, non-commercial pine saplings will be selectively slashed to maintain deciduous species in woody draw habitats. In key identified wildlife travel corridors along riparian and woody draw bottoms where healthy, vigorous understory pine thickets occur, limited thinning will occur to promote 1 to 2 acre patches of big game security cover and travel corridors.</p>
16	Wildlife Habitat Security	<p>Construct temporary roads at least 100-feet away from wet areas including seeps, springs, wet meadows, and riparian corridors (except at crossings when necessary) to maintain habitat diversity. Restrict mechanized equipment within 50-feet of wet areas: seeps, springs, wet meadows, and riparian corridors.</p>
17	Wildlife Enclosure Study Area.	<p>Maintain the West Fork of Little Pumpkin Creek Cattle / Wildlife Exclosure Study Area that was established in 1964 in T47E, T2S, Sec. 20, SW <math>\frac{1}{4}</math>. Maintain the study area integrity for future investigations by restricting logging, mechanical slashing, and road construction within the exclosure. Avoid use of prescribed burning in and around the exclosure unless the fence and posts can be protected, and the action will be compatible with the study.</p>
18	Golden Eagle Nest And Habitat.	<p>Protect and buffer golden eagle nests and habitat found during unit layout from planned activities by following US Fish and Wildlife Service technical advice. (One nest has already been identified either in or close proximity to Unit# EO11, a CT1 treatment unit (SE <math>\frac{1}{4}</math>, S23, T2S, R46E). No activities shall commence within <math>\frac{1}{2}</math> mile of known golden eagle nests until a Forest wildlife biologist has reviewed the proposed treatment and determined that any nest sites and adjacent habitat are adequately protected and buffered from treatment activities. Implement a <math>\frac{1}{2}</math></p>

No.	Resource / Concern	Action Alternatives Design Features And Mitigation
		mile no disturbance zone around nest sites from February 1 through July 31. The no disturbance zone may be modified after review by a Forest wildlife biologist.
19	Raptors (MIS & Sensitive)	Protect and buffer active raptor nests (bald eagle, peregrine falcon, prairie falcon, and merlin) found during unit layout from planned activities in accordance with best available science. No activities shall commence within ¼ mile of known raptor nests until a Forest wildlife biologist has reviewed the proposed treatment and determined that any nest sites and adjacent habitat are adequately protected and buffered from treatment activities. The Contract Administrator will seek cooperation from the contractor to delay work activities in this area until the young have fledged.
20	Wild Turkey Roost Trees.	Avoid removal of wild turkey roost trees that are identified during unit layout. These trees are typically large dbh and crown diameter trees with signs of turkey scat and feathers on the ground below the tree. Coordinate options with a Forest wildlife biologist when such trees are encountered during treatment activities prior to commencing planned treatments around these trees.
21	Permanent Tree Growth Study Plots	To maintain long-term monitoring integrity on management effects during implementation of project activities, control clusters in FACTS Id's A110200037, A140200003, A140400003 shall be protected with a 50-foot untreated buffer. The Forest Silviculturist shall be notified prior to implementation to locate plots.
22	Scenery Resources	<p>Straight lines and right angles should be avoided. Where the unit is adjacent to denser forest, the percent of thinning within the transition zone will be progressively reduced toward the outside edge of the unit. Vary the width of the transition zone (average 200 feet). Where the unit interfaces with an opening, the percent of thinning within the transition zone should be progressively increased toward the outside edge of the unit. Soften edges by thinning adjacent to existing unit boundaries, removing taller, older trees and favoring younger ones.</p> <p>Where new access roads and skid trails meet a primary travel route, they should intersect at a right angle and, where feasible, curve after the junction to minimize the length of route seen from the primary travel route. Any skid trail or haul road crossings will be perpendicular to designated forest trails, where feasible.</p> <p>For temporary roads and landings that may be viewed from East Fork Otter Creek Road, but is critical for harvest units EO 5, EO 6, EO 8, EO 15, 10A, and 20, screening trees (trees ≤ 8 inches) should be retained, where feasible one tree-height below roads and landings (including cable landings) when viewed from below. When viewed from above, retain screening trees (trees ≤ 8 inches) one tree-height above roads and landings and/or prescribe a higher leave basal area. Avoid creating a straight edge of trees by saving clumps of trees and single trees with varied spacing.</p> <p>For harvest units with a Retention Visual Quality Objective (VQO) and Foreground visibility along East Fork Otter Creek Road and forest boundaries (Units EO 5, EO 6, EO 8, EO 15, 10A, and 20), use understory (trees ≤ 8 inches) to provide screening of overstory and understory vegetation treatments. The screening is to be provided along the stand boundary nearest the road or Forest boundary for an average 100 feet in width.</p>

## Monitoring

**Regeneration monitoring:** As described on pages 2-12 – 2-13, all regeneration and seed tree harvests, and small openings created during prescribed fire implementation would be monitored (1<sup>st</sup>, 3<sup>rd</sup>, and 5<sup>th</sup> year) to ensure forest cover reestablishment in accordance with monitoring requirements in the Forest Plan (item E2).

**Fire / Air Quality:** Prescribed fire would be used to reduce ladder fuels and litter/duff layers while maintaining control of the burn. Through careful monitoring by the district fuels

specialist, additional entries would be made until the desired residual stand characteristics have been accomplished. This would allow individual elements of the fuels environment to be treated with greater success and control.

The Forest Service cooperates with states, other agencies, and organizations in identifying, evaluating, proposing solutions, and monitoring air quality problems associated with activities permitted on National Forest, which includes prescribed fire.

**Sensitive Plants, Range, and Weeds:** Grazing allotments are periodically monitored under existing range programs to assess impacts to sensitive plants. Each project and public use area would be monitored for noxious weeds and the implementation and effectiveness of BMP mitigation measures, prioritized by the degree of risk. Areas where there were temporary roads and treatment units that created bare soil (STR1 and ST1) are priority areas. Any noxious weeds that are found would be treated as directed by the 2006 Custer NF Weed EIS, and in compliance with the Forest Plan.

**Water Quality:** The Custer National Forest would conduct a Forest level BMP audit within two years of project implementation. This monitoring would evaluate BMP application and effectiveness from a qualitative standpoint. Adaptive management is embedded within the BMP audit process and referred to as the feedback loop.

Monitoring chemical/biological water quality conditions or physical stream characteristics is not proposed due to 1) the low discharge or intermittent flow regimes of stream in the project area and 2) the inability to distinguish the effects of individual activities in a cumulative effects setting. Timber harvest, road construction/reconstruction/maintenance, prescribed burning, grazing and recreation all potentially contribute to water quality and stream impacts and therefore would require a research level monitoring project to determine what activities are causing changes and the degree of change.

**Soil Quality:** Timber sales are audited for compliance with BMP's and monitored to see that design features that reduce soil effects are implemented. Soil quality monitoring would be conducted in both commercial and non-commercial treatment units to ensure Forest and Regional soil quality standards and guidelines are being met (as per FSM 2500-99-1).

**Wildlife:** Ongoing monitoring efforts will continue post treatment. In addition, treatment units will be surveyed to document whether prescriptions achieved wildlife objectives as specified by numerous design features. Monitoring efforts may include, but not be limited to:

- 1) Field surveys to document presence/absence of breeding goshawks (Woodbridge and Hargis, 2006);
- 2) Field surveys of CT1 units to assess post-treatment stand characteristics per the Regional Goshawk Overview criteria (Brewer et al., 2009) and design feature #8
- 3) Common stand exams to assess post-treatment size and densities of snags (design feature #11)
- 4) Field surveys to document presence/absence signs of heavy equipment/soil disturbance in prairie dog towns (design feature #14))

- 5) Field surveys for presence / absence and relative abundance of sensitive species (Montana Natural Heritage Program protocols).
- 6) Review effectiveness of design features for retention of golden eagle nests, raptor nests, and turkey roost trees (Design features #18, 19, & 20).
- 7) Field surveys to woody draws to assess post-treatment stand characteristics per prescriptions (Design features #12).
- 8) Field surveys to sagebrush areas to determine post-treatment stand characteristics and distribution per prescriptions (Design features #13).
- 9) Monitor and enforce seasonal road closures (Alt B and C only).

## **D. ALTERNATIVE D – No ACTION**

Under the No-Action alternative, none of the vegetation treatments, prescribed fire, or road management activities would occur in the BCLMP area to meet the purpose and need for the project, and the existing condition remains at the status quo. Current management practices would not change. Approximately 75% of the forested area within the BCLMP area has surface, ladder and canopy fuels loads that remain susceptible to a high severity wildfire.

# **III. CONSISTENCY WITH THE CUSTER FOREST PLAN**

## **A. FOREST PLAN CONSISTENCY - ACTION ALTERNATIVES**

Proposed treatments were developed to create a spatial distribution of developmental classes and structure (tree size and spacing), trend the existing vegetation condition class to Forest Plan desired vegetation characteristics across this landscape, and reduce the threat of a catastrophic, stand-replacement fire in high-risk areas identified in the Powder River County Wildfire Protection Plan. The proposed treatments would better enable fire fighters to suppress and contain wildfires with undesirable fire effects, and increase the ability of portions of the BCLMP area to withstand high frequency low severity wildfires, and meet the purpose and need for the project.

Proposed treatment is consistent with Forest-wide direction (goals, objectives, and standards) and Management Area Direction. No Forest Plan amendments are proposed or required to implement an action alternative. The consistency of the proposed treatments in relation to the Forest Plan forest-wide goals, objectives, and standards, and management area direction is discussed in detail below.

### ***Forest-wide Direction***

Forest-wide goals, objectives, and management standards for the Custer National Forest provide broad direction to manage and/or improve forest resources, fish and wildlife habitat, and other multiple uses occurring on national forest.

Forest wide goals include, but are not limited to:

- Manage and/or improve key wildlife,

- Enhance habitat quality and diversity (USDA 1986, p. 3).
- Harvest timber within sustained-yield capability to help maintain timber dependent communities, forest health, vigor, productivity, provide vegetative diversity for wildlife, eliminate tree encroachment on selected livestock grazing areas, and provide scenic openings. USDA 1986 p. 3-4.

Forest-wide objectives include, but are not limited to:

- Emphasize active management of wildlife habitat. Mitigation of adverse effects from other resource activities will continue.
- Provide an even flow of timber products to help support local industry, maintain a healthy diverse timber resource, improve or maintain wildlife habitat, salvage dead timber, control insects and disease, and reduce natural fuel loading.
- Protect key wildlife habitats (such as riparian areas and woody draws) and improve water quality
- Insure a safe and legal environmental for public use, as well as for resource management activities. Use a cost-efficient fire protection and fuels management program that is responsive to the goals of the Forest, including cooperative efforts with other agencies and organizations. USDA 1986, p. 4-5.

Forest-wide management standards, include but are not limited to:

- Manage the land to maintain at least viable populations of existing native and desirable non-native species. USDA 1986, p.16
- Coordinate Forest Service programs, plans, and activities which affect wildlife or their habitats with local, State, and Federal agencies and interest groups to assure all management aspects of wildlife are considered. USDA 1986, p.16
- Coordinate with State Fish and Game agencies to develop management strategies that will maintain wildlife populations within habitat capacities and management area objectives. USDA 1986, p.16
- Provide for the maintenance and improvement of habitats for Management Indicator Species. USDA 1986, p.18
- Manage key wildlife species and key habitat in cooperation with state and Federal agencies. Management practices to improve wildlife habitat may include, but are not limited to rejuvenation of plant species, protection of fragile habitats, and timber harvesting to meet wildlife habitat needs. USDA 1986, p.18
- Design and apply timber management activities to maintain a variety of age classes. USDA 1986, p.24
- Develop and implement a Fire Management Action Plan that meets resource objectives and includes...appropriate suppression responses, direction for the use of prescribed fire, planned and unplanned ignitions, and consideration of natural fire cycles in fire-dependent and/or fire-related ecosystems. USDA 1986, p.38.

As the lists above indicate, Forest-wide goals, objectives, and standards reflect opportunities to manage, maintain, improve, enhance, and/or protect forest resources, including timber, vegetative and species diversity, and wildlife habitat. A wildlife goal specifically emphasizes

active management of wildlife habitat (USDA 1986, p. 4). Chapter 3 will show that proposed treatment improves vegetative diversity across the landscape, reduces the risk for a stand replacement wildfire with undesirable effects, reintroduces fire to portions of the landscape, and either maintains or improves wildlife habitat. Implementation of design criteria and mitigation measures would result in no adverse impact to issues raised as a concern by the public such as impacts to northern goshawk, big game security, sensitive plants, etc.

The Action Alternatives vary in the amount of treatment proposed, with Alternative A proposing the most treatment on the landscape, and C the least. Alternative C was developed in response to the concern that proposed treatment would negatively impact the goshawk, and eliminates all treatment from the post fledgling family areas (PFAs). One could view no treatment in the PFA's as protection or maintenance of existing habitat. One could also view treatment in the PFA's as a protective measure because the treatment provides moderate resiliency against a stand replacement wildfire. According to Section 3.2 – Fuels, the CT1 treatment in the PFAs doubles the wind speed necessary to initiate torching, and increases the wind speed to sustain crown fire by 10% compared to the existing condition (See Section 3.2 – Fuels Effects of Commercial Thin – Wildlife). Both no treatment and the treatment as proposed comply with forest-wide goals, objectives, and standards, although the treatment alternative better responds to the forest-wide objective to actively manage wildlife habitat.

### ***Management Area Direction***

Proposed treatments are consistent with Management Area Direction in the Custer Forest Plan. The BCLMP area includes Management Areas (MAs) B, D, F, G, M, N, and P. These MA are depicted on Map 17 in Appendix A. MA's M (riparian area) and N (woody draws) are currently not mapped, and do not appear on Map 17.

Tables 2.15, 2.16, and 2.17 identify proposed treatment by management area for Alternative A, B, and C. Note, the SC and SCNC treatments occur in woody draws (MA N). As woody draws are currently not mapped in the project area, GIS mapping places these treatment units in MA D and G.

**Table 2.15: Alternative A - Proposed Treatment by Management Area**

	Management Areas					
Prescription	B	D	F	G	P	Total
CT		153		24		178
CT1		982	4	273	7	1267
LIB		22				22
NC4		1050				1050
NC5		2219		17		2237
NC1	178	8		401		587
NC2		53		56		109
NC3				68		68

**\*SC and SCNC** treatments occur in woody draws (MA N). As woody draws are currently not mapped in the project area, GIS mapping places these treatment units in MA D and G.

	Management Areas					
Prescription	B	D	F	G	P	Total
NT	64	2826	0	622	32	3545
PCT		120				120
RXB	982	1943		669	1	3594
SC*		60		4		64
SCNC*		49				49
SH1		214		16		229
ST1		627		171		798
STR		60				60
STR1		76				76
<b>Total</b>	<b>1225</b>	<b>10461</b>	<b>4</b>	<b>2323</b>	<b>40</b>	<b>14053</b>

Acres were calculated from a GIS database, and are an approximate summation of proposed treatment.

**Table 2.16: Alternative B – Proposed Treatment by Management Area**

	Management Areas					
Prescriptions	B	D	F	G	P	Total
CT		106		24		130
CT1		971	4	255	7	1238
LIB		22				22
NC4		1069				1069
NC5		2380		17		2397
NC1	178	8		401		587
NC2		53		74		128
NC3				68		68
NT	64	2826	0	622	32	3545
PCT		120				120
RXB	982	1943		669	1	3594
SC*		50		4		55
SCNC*		59				59
SH1		205		16		221
ST1		514		171		685
STR		60				60
STR1		76				76
<b>Total</b>	<b>1225</b>	<b>10461</b>	<b>4</b>	<b>2323</b>	<b>40</b>	<b>14053</b>

\*SC and SCNC treatments occur in woody draws (MA N). As woody draws are currently not mapped in the project area, GIS mapping places these treatment units in MA D and G.

Acres were calculated from a GIS database, and are an approximate summation of proposed treatment.

**Table 2.17: Alternative C – Proposed Treatment by Management Area**

Prescriptions	Management Areas					Total	*SC and SCNC treatments occur in woody draws (MA N). As woody draws are currently not mapped in the project area, GIS mapping places these treatment units in MA D and G.
	B	D	F	G	P		
CT		106				106	
LIB		22				22	
NC4		1045				1045	
NC5		1718		17		1736	
NC1	178	52		555		785	
NC2		4				4	
NT	64	4861	4	1025	39	5993	
RXB	982	1854		669	1	3506	
SC*		46		4		50	
SCNC*		47				47	
SH1		205		2		207	
ST1		445		51		496	
STR		56				56	
<b>Total</b>	<b>1225</b>	<b>10461</b>	<b>4</b>	<b>2323</b>	<b>40</b>	<b>14053</b>	

Acres were calculated from a GIS database, and are an approximate summation of proposed treatment.

## ***Management Area B***

### **MA B**

**Acres: 1,225**

**Emphasis: Intensive Range Management**

### **Goals:**

Provide for the continuation of livestock grazing, implementation of intensive range management systems and the facilitation of minerals and energy development with consideration of other resource needs. USDA 1986, p.45

In areas not considered key for wildlife, adverse impacts to the wildlife habitat will be mitigated where feasible, but not to the exclusion of range and mineral/energy management and development activities. In key wildlife areas, the habitat may not be adversely impacted from development activities. USDA 1986, p.45

### **Standards:**

- Emphasis will be to maintain existing wildlife habitat. Habitat may be improved when consistent with other resource needs. USDA 1986, p.45
- Perpetuate or enhance livestock forage and wildlife habitat values. Management activities may include removal of wood products. USDA 1986, p.46
- Silvicultural systems may include even or uneven aged systems. Regeneration systems may be applied to meet management area goals. USDA 1986, p.46
- Prescribed fire may be used for range and wildlife enhancement, fuels and debris reduction. USDA 1986, p.47
- Visual quality objectives include Retention, Partial Retention, and Modification.

Management activities will be designed and implemented to blend with the natural landscape. USDA 1986, p.45

**Treatment:** Treatment activities (see Tables 2.15, 2.16, and 2.17) include a combination of:

- Noncommercial thinning (NC1)
- Prescribed fire (RXB)
- No Treatment

These treatments are consistent with MA B because:

1. Proposed forest management activities would perpetuate and enhance wildlife habitat values, maintain forest health, vigor, and productivity and provide vegetative diversity for wildlife. Tree encroachment on traditional grassland areas would be reduced. With the reduction of ponderosa pine, sites would have an increase in forage for the grazing animal.
2. Existing rangeland plant communities are adapted to fire and in some cases renewed by fire. Fire increases the palatability of plants by eliminating old decadent material and provides more access to new tender growth.
3. Grazing rotation would be made prior to the grazing season allowing for plant recovery. Pastures are typically allowed to rest for a growing season following prescribed fire.
4. Locations of range improvements would be identified to ensure protection of structures, with any damaged structures repaired or replaced post treatment.
5. Seasonal motorized closure of Road 44094 through MA B would improve big game security and hiding cover during the hunting season.
6. Thinning activities would create short-term visual effects from ground disturbance, slash, and stumps. Prescribed fire would create short-term visual effects including a blackened forest floor and could kill individual and small patches of trees. These impacts would diminish as understory vegetation establishes. Long-term effects (> 5 yrs.) would be positive, creating more open stands with a mosaic of shrubs, grasses, and herbs. Visual Quality Objectives would be met.

## ***Management Area D***

**MA D**

**Acres:** 10,461

**Emphasis:** Habitat/Wildlife

### **Goals:**

Maintain or improve the long-term diversity and quality of habitat for the selected species identified by Ranger District as well as accommodate other resource management activities such as timber harvest, livestock grazing, and oil and gas development. USDA 1986, p.53

Some short-term habitat impacts may be necessary to achieve long-term wildlife goals. This goal will be achieved through direct wildlife habitat improvement, as well as selecting, scheduling and implementation of cultural practices associated with other multi-resource management activities. USDA 1986, p. 53

### **Standards**

- Emphasis on maintaining or improving wildlife habitat. USDA 1986, p. 53

- Implementation guidelines will be developed as needed to meet the intent of the goal for this MA and will address habitat and population goals for selected species, quality and quantity of vegetation (i.e. nesting or thermal cover), mitigation measures... USDA 1986, p. 54
- Contains land suitable for timber management. Timber treatments will perpetuate or improve key wildlife habitat and livestock forage. USDA 1986, p. 54
- Silvicultural systems may include even or uneven aged systems. Productive forest lands within this area are suitable for timber production. USDA 1986, p. 54
- Prescribed fire may be used for range improvement and wildlife habitat, timber stand maintenance, fuels reduction, sanitation, maintaining vegetation, and associated wildlife habitat dependent on periodic fire. USDA 1986, p. 56
- Visual quality objectives include Retention, Partial Retention, and Modification. Management activities will be designed and implemented to blend with the natural landscape. USDA 1986, p. 53

**Treatment:** Treatment includes a combination of:

- Noncommercial Thinning (NC1, NC2, NC4, NC5, PCT)
- Commercial Thinning (CT, CT1)
- Liberation Harvest (LIB)
- Regeneration Harvest (SH1, ST1, STR, STR1)
- Prescribed Fire (RXB)
- No Treatment (NT)

These treatments are consistent with MA D because:

1. Proposed forest management activities would help maintain forest health, vigor, and productivity. Long term diversity and quality of habitat would have a higher probability to be maintained.
2. MA D contains land suitable for timber harvest, and commercial harvest is allowed. MA D provides that management activities should perpetuate or improve wildlife habitat and livestock forage, and acknowledges that short-term habitat impacts may be necessary to achieve long-term wildlife goals. Commercial treatments are proposed as a tool to reduce fuel loading in MA D and create a mosaic of habitat types across the landscape. Proposed treatment would reduce the risk of a high severity fire, increase the resiliency of vegetation to respond to a low or moderate intensity fire, and create a variety of successional stages for wildlife to utilize over time.
3. CT1 treatments are proposed within goshawk PFAs, retain greater than 50% canopy cover, and follow the best science recommended by Brewer and Reynolds for treatment in goshawk habitat. CT1 treatments would also maintain hiding cover for big game.
4. Seasonal motorized closure of Road 41338 in MA D would increase big game security and hiding cover during the hunting season.
5. Thinning and burning activities would create short-term visual effects from ground disturbance, slash, stumps, a blackened forest floor, and could kill individual or patches of trees. These impacts would diminish as understory vegetation establishes. VQOs would be met long term (> 5 yrs.). Long-term effects would be positive, creating more open stands with a mosaic of shrubs, grasses, and herbs.

6. Regeneration treatments would create a mosaic of openings across the landscape varying in size (the largest being approximately 100 acres). Several seed tree and shelterwood treatments would be visible in the foreground and/or middle ground from East Otter Creek Road, private ranches, and/or Beaver Stacey Road. Short-term effects (< 5 yrs.) would be negative, including slash, cut stumps, and ground disturbance. Long-term effects (> 5 yrs.) would be positive, with a more diverse mosaic of understory vegetation including a mix of shrubs, grasses and forbs. VQOs would be met long-term with the implementation of proposed mitigation measures and as understory vegetation re-establishes. Created openings would mimic natural occurring openings. The size, shape, and edge treatments would transition into adjacent, uncut forests.
7. Liberation treatments would remove approximately 22 acres of dense, mature ponderosa pine along with understory thinning. The area would appear as a fully stocked ponderosa pine regeneration stand. Mitigation measures would ensure the treatment mimics natural openings. VQOs of retention and partial retention would be met long term.

## ***Management Area F***

**MA F**

**Acres: 4**

**Emphasis:** Developed Recreation Sites

### **Goals**

Provide a spectrum of recreation opportunities and settings in and around developed sites and the access corridors to the sites in the categories of Semiprimitive Non-motorized/Motorized, Roaded Natural Appearing and Rural. USDA 1986, p.61

### **Standards**

- Vegetation in developed sites will be managed to maintain the appropriate recreation setting, including planting new plant material to supplement existing vegetation as well as preventive measures for insect and disease control when necessary. USDA 1986, p. 61
- Visual Quality Objectives in the foreground viewing areas from a developed site or along an access corridor will be either Retention or Partial Retention. USDA 1986, p. 61
- Management activities that contribute to the opportunity of wildlife related recreation is encouraged. USDA 1986, p. 62
- Harvest within developed recreation sites will normally be for removal of hazardous trees and protection of improvements. Timber within the recreation corridors is suitable for timber management providing goals of MA are met. USDA 1986, p. 62
- Post, poles, fuelwood, sawlogs, and other wood products may be harvested from within developed sites and along access corridors providing that the recreation setting is maintained or enhances, and the visual quality objective is achieved. USDA 1986, p. 62
- Prescribed fire may be used for slash and debris disposal, enhancement of visual quality and preventative measures to reduce wildfire intensity. Unplanned ignitions will not be used as a management practice. USDA 1986, p. 63

**Treatment:**

The project area contains 4 acres of MA F (Developed Recreation). This site is the Holiday Campground. The Action Alternatives propose to treat all four acres by:

- Commercial Thinning (CT1)

The CT1 treatment is consistent with MA F goals and standards because:

1. Proposed forest management activities would help maintain recreation opportunities and settings maintain forest health, vigor, and productivity and provide vegetative diversity for wildlife.
2. Wood products may be harvested from within developed sites.
3. Canopy cover after harvest would be greater than 50%, and the denser canopy maintains the recreational setting in the campground.
4. The visual quality objective of retention or partial retention is achieved long-term (greater than 5 years).
5. Individual trees selected for harvest within the campground are hazard trees, or a threat to campground improvements. Character trees would be left intact to provide shade and an enjoyable camping experience.

***Management Area G*****MA G****Acres:** 2,323**Emphasis:** Healthy Forest & Wood Products**Goals:**

Manage these areas for the maintenance and improvement of a healthy diverse forest and as a source of wood products for dependent local markets. USDA 1986, p. 64

Silvicultural systems will consider other resource needs such as wildlife habitat, visual impacts, and livestock management. USDA 1986, p. 64

**Standards:**

- Analyze and mitigate impacts to wildlife/habitat. Protect unique wildlife features. USDA 1986, p. 64
- Retain two snags per acre, where they exist. USDA 1986, p. 64
- Even-aged management is preferred. USDA 1986, p.65
- Silvicultural systems that favor natural regeneration will be emphasized. The objective will be to regenerate harvested areas within five years. USDA 1986, p.65
- Manage old growth to meet habitat requirements for a minimum viable population of old growth dependent wildlife species. USDA 1986, p. 65
- Adjust seasons of operations and contract periods to protect wildlife and soil and water values, and reduce conflicts with recreation traffic. USDA 1986, p. 65
- Precommercial thinning will be utilized in a cost-effective manner on areas with high site index. USDA 1986, p. 65
- Over stocked stands will be evaluated for wildlife needs prior to treatment. USDA 1986, p. 65
- Prescribed fire may be used for timber stand maintenance and thinning, slash disposal, natural fuel reduction, wildlife habitat maintenance and enhancement with an approved

prescribed fire plan. USDA 1986, p.65

- Visual Quality Objectives will not exceed Modification. Areas of Retention and Partial Retention will be common. USDA 1986, p. 64

**Treatment:** The project area contains 2,323 acres of MA G. The Action Alternatives propose a variety of treatment including:

- Noncommercial Thinning (NC1, NC2, NC3, NC5)
- Commercial Thinning (CT, CT1)
- Regeneration Harvest (SH1, ST1)
- Prescribed Fire (RXB)
- No Treatment (NT)

These treatments are consistent with MA G goals and standards because:

1. Proposed forest management activities would help maintain forest health, vigor, and productivity and provide vegetative diversity for wildlife. Implementation of proposed activities would assist in maintenance and improvement of a healthy diverse forest and vegetation diversity for wildlife.
2. Regeneration treatments are designed to favor natural regeneration.
3. A goal of MA G is to provide a source of wood products. The CT, CT1, SH1, and ST1 treatments provide wood products to help maintain timber dependent communities.
4. The CT1 treatments retain greater than 50% canopy cover to maintain existing goshawk habitat within post-fledgling family areas (PFAs). Most of the mature trees are retained. Two existing goshawk nests and alternate nest stands would be buffered by a 40-acre no treatment zone. The 50%+ canopy cover would also provide hiding cover for big game. Identified long-term turkey roost trees would be retained. Snags would be retained in accordance with Forest Plan standards.
5. Seasonal motorized closure of Road 44094, which goes through MA G and B, would improve big game security cover during the hunting season.
6. Visual Quality Objectives of retention and partial retention would be met in the long term (greater than 5 years) as disturbed areas revegetate, stump cuts dull, and boundary paint fades.

## ***Management Area M***

**MA M**

**Acres: Not Mapped    Emphasis: Riparian Areas**

### **Goals:**

Manage to protect from conflicting uses in order to provide healthy, self-perpetuating plant and water communities that will have optimum diversity and density of understory and overstory vegetation. USDA 1986, p. 80

### **Standards:**

- Habitat for old growth/snag cavity dependent species will be maintained. USDA 1986, p. 80

- Adequate tree and shrub vegetation to contribute to stable bank and stream cover will be maintained unless project analysis indicates a need to reduce cover to meet fish or wildlife habitat objectives. Water quality will be protected or improved. USDA 1986, p. 80

**Treatment:** No treatment is proposed in MA M under any alternative.

## ***Management Area N***

**MA N**                      **Acres: Not Mapped**      **Emphasis: Woody Draws**

### **Goals:**

Provide healthy, self-perpetuating plant communities that will have optimum diversity and density of understory and overstory vegetation. USDA 1986, p. 83

### **Standards:**

- Prescribed fire may be used for wildlife habitat enhancement, and as a vegetative manipulation tool. USDA 1986, p. 84
- Visual Quality Objectives will be met in this area except where crossed by roads. USDA 1986, p. 83
- The natural-appearing landscape will remain dominant and most management activities will not be evident. USDA 1986, p. 83
- Habitat for old growth/snag cavity dependent species will be maintained. USDA 1986, p. 83
- Harvest timber only if woody draw wildlife and fishery habitat values can be improved or protected. USDA 1986, p. 84

**Treatment:** The project area contains scattered (unmapped) woody draws throughout the project area. The Action Alternatives propose a variety of treatment including:

- Noncommercial Thinning (SCNC)
- Commercial Thinning (SC)

These “special cuts” remove competing ponderosa pine from aspen/green ash stands. These treatments are consistent with MA N goals and standards because:

1. Proposed forest management activities in the woody draws would provide healthy plant communities and increase diversity in the understory vegetation, enhancing wildlife habitat values.
2. The treatment is being proposed specifically to improve the condition of the aspen/green ash stands, thus enhancing a habitat type that is not overly abundant in the project area.
3. Visual quality objectives of retention and partial retention would be met long term (greater than five years).

## ***Management Area P***

**MA P**                      **Acres: 40**                      **Emphasis: Administrative Sites**

### **Goals:**

Provide adequate facilities for the administration of the Custer National Forest. USDA 1986, p. 88

**Standards:**

- Visual Quality Objectives may not exceed modification. USDA 1986, p. 88
- Is not considered part of the suitable timber base. Timber harvest may be used to protect or maintain other values. USDA 1986, p.88
- Prescribed fire may be used for debris disposal and maintenance of administrative pastures. USDA 1986, p. 88

**Treatment:** The project area contains 40 acres of MA P surrounding the old Whitetail Ranger Station. The Action Alternatives propose a variety of treatment including:

- Commercial Thinning (CT1) – 7 acres under Alt A and B; 0 acres under Alt J
- Prescribed Fire (RXB) - 1 acre
- No Treatment (NT) – majority of the 40 acre MA

These treatments are consistent with MA P goals and standards because:

1. Proposed forest management activities would help maintain forest health, vigor, and productivity and provide vegetative diversity for wildlife.
2. Only 7 acres of timber harvest is proposed in MA P under Alternatives A and B. This harvest accounts for a very small portion of the proposed treatment, and the CT 1 treatment retains greater than 50% canopy cover. It is being proposed to reduce fuel loading in the immediate vicinity of the old Whitetail Ranger Station, and better protect the structure from fire.
3. The one-acre of prescribed fire is also proposed to reduce surface fuel loading, and provide a degree of protection to this structure.

## **B. FOREST PLAN CONSISTENCY - NO ACTION ALTERNATIVE**

A forest-wise objective is to emphasize *active* management of wildlife habitat. Other objectives include maintaining a healthy diverse timber resource, maintaining a variety of age classes, and managing key wildlife species and habitat in cooperation with state and Federal agencies. The No action Alternative maintains existing wildlife populations and habitat at the status quo, including habitat for Management Indicator Species.

While not directly inconsistent with forest-wide goals, objectives, standards, and management area direction, the no action alternative does nothing to improve existing habitat or lessen the risk of wildfire. The no action alternative would result in a decline in forest health, vigor, and productivity. The area would continue to infill from tree colonization. Long term diversity and quality of wildlife habitat is at increased risk for catastrophic fire. Forested woody draws with a ponderosa pine component would continue to establish and grow, reducing diversity of understory and overstory vegetation, thus reducing habitat values. The protection or maintenance of other values (campground, recreation opportunities, etc.) is at a higher risk from catastrophic fire compared to the action alternatives. The No Action alternative does not provide

wood product removal opportunities for timber dependent communities, which is allowed by the Forest Plan.

## **IV. CUMULATIVE EFFECTS**

Ongoing activities in the BCLMP area include intensive grazing management systems for domestic cattle, aggressive wildland fire suppression, limited personal use firewood cutting and seasonal recreational hunting for big game and upland game birds (primarily turkey). These activities in themselves would not alter canopy cover or canopy layers. However, a large disturbance (fire or epidemic beetle infestation) could decrease canopy cover and canopy layers and affect the Proposed Action.

Cattle utilize the grassland vegetation in and around the BCLMP area. The BCLMP encompasses four grazing allotments on National Forest System lands, which are described in the Range portion of Chapter 3 of this document. Additional grazing occurs on adjacent private lands.

Planning for the CNF Proposed Planned & Un-Planned Fire Use Forest Plan Amendment (Erickson 2009) was initiated in late 2009. This amendment would enhance wildland fire management by allowing a wider range of fire management strategies and tactical options that would provide for fire's natural role in the environment while lowering the threat to human life, property, and cultural resources, along with reducing suppression costs. The increased flexibility would provide more opportunities to meet Forest Plan goals and objectives. Planning is ongoing for this Forest Plan Amendment and is expected to be completed in Winter 2011, with implementation beginning summer 2011.

Table 2.18 summarizes all projects that were considered for the cumulative effects analysis.

**Table 2.18: Projects Considered in Cumulative Effects Assessment for the Beaver Creek Landscape Management Project**

Activity	On NFS Lands (Yes/No)	Estimated Period of Activity (Calendar Year)	Past, Present, or Reasonably Foreseeable Future Actions (RF)	Within Project Area	Within Ranger District Boundary	Project Description
Fly-Wilbur Timber Sale – Post-Sale Activities	Yes	2007-2010	Present, RF	No	Yes	Vegetation Management Activities post timber sale
Fly-Wilber Timber Sale	Yes	2007	Past	No	Yes	Vegetation Management Project
Threemile Project	Yes	2003-2011	Past, Present, RF	No	Yes	Vegetation Management Project including Prescribed fire and fuels reduction
Schiller Timber Salvage	Yes	1988 -1989	Past	Yes	Yes	Salvage timber sale, Tree planting
East Fork of Otter Creek Road	Yes	2011-2012	Present, RF	Yes	Yes	The Federal Highway Administration awarded a contract for reconstruction of Easter Otter Creek Road in 2011-2012.
FS Route 4409	Yes	2011	Present, RF	Yes	Yes	The Custer NF recently awarded a contract to reconstruct/realign approximately 0.3 miles of Route 4409 near the junction with the East Otter Creek Road. The remainder of the road may be reconstructed as part of a timber sale, or under separate contract.
Green Creek Timber Sale	Yes	1988	Past	Yes	Yes	Approx. 70 acres of liberation cut, 26 acres of shelterwood, and 10 acres of seed tree harvest in the project area
Travel Plan Management and ongoing motorized use.	Yes	Annually	Present, RF	Yes	Yes	Implementation of Ashland Travel Management Plan and ongoing motorized use authorized by this plan.
Permitted livestock grazing	Yes	Annually	Past, Present, RF	Yes	Yes	The grazing of domestic livestock, typically cattle on National Forest Land
Fifteen Elk Landscape Management Project	Yes	Potentially 2012-13	RF	No	Yes	Vegetation, fuels, wildlife habitat management project
Noxious weed treatment and effects of existing noxious weed infestations.	Yes	Annually	Past, Present, RF	Yes	Yes	Noxious weed treatment as prescribed by the Custer National Forest Weed EIS.
Dispersed Recreation	Yes	Annually	Past, Present, RF	Yes	Yes	Recreational activities consisting of camping, hiking, hunting, fishing, bird

Activity	On NFS Lands (Yes/No)	Estimated Period of Activity (Calendar Year)	Past, Present, or Reasonably Foreseeable Future Actions (RF)	Within Project Area	Within Ranger District Boundary	Project Description
						watching, OHV, etc.
Recreation in Developed sites (Red Shale, Cow Creek, Holiday Springs, Whitetail Cabin)	Yes	Annually	Past, Present, RF	Yes (some)	Yes	Recreation in campgrounds and rental cabins
Timber Creek Prescribed burning	Yes	2006-2011	Past, Present, RF	No	Yes	Prescribed fire treatments
Private land timber harvest and fuel reduction	No	1995	Past	No	Yes	Vegetation management on private lands
Private land livestock grazing	No	Annually	Past, Present, RF	No	Yes	Private land livestock grazing
Private land farming	No	Annually	Past, Present, RF	No	Yes	Hay production on private land
Wildfire management (suppression/ Resource benefit)	Yes	Annually	Past, Present, RF	Yes	Yes	Fire suppression activities on National Forest Lands
Cow Creek Fuels Project	Yes	2011-2016	RF	No	Yes	Prescribed fire treatments in Cow Creek
Road maintenance	Yes	Annually	Past, Present, RF	Yes	Yes	Road grading, culvert Cleaning, ditch cleaning
Liscom Butte Prescribed Fire	Yes	2010-2012	Past, RF	No	Yes	Prescribed fire treatment 300 ac.
Home Creek Prescribed Fire	Yes	2010-2012	Past, RF	No	Yes	Prescribed fire treatment, Fuel Reduction 300 ac.
Campground Maintenance (Red Shale, Holiday Springs, and Cow Creek Campgrounds)	Yes	Annually	Past, Present, RF	Yes,	Yes	Fuel Reduction, Prescribed fire on approx. 100 acres
Poker Jim	Yes	2010	Present	No	Yes	Prescribed fire 600 ac.
Firewood gathering	Yes	Annually	Past, present, RF	Yes	Yes	Personal use firewood gathering under permit.
Irrigation (spring and	Yes	Ongoing	Past, present, RF	Yes	Yes	Presence and ongoing use of spring and

<b>Activity</b>	<b>On NFS Lands (Yes/No)</b>	<b>Estimated Period of Activity (Calendar Year)</b>	<b>Past, Present, or Reasonably Foreseeable Future Actions (RF)</b>	<b>Within Project Area</b>	<b>Within Ranger District Boundary</b>	<b>Project Description</b>
water developments on and off forest).						water developments.
Mining and energy development	No	None	Not applicable	No	No	Concern raised in scoping – No such projects known.
Pumpkin Divide Timber Sale	Yes	1987	Past	Yes	Yes	Approx. 37 acres of Shelterwood cut in project area
Redtail Timber Sale	Yes	1987	Past	Yes	Yes	Approx. 36 acres of Seedtree harvest in project area
Whitetail Timber Sale	Yes	1984-86	Past	Yes	Yes	Approx. 30 acres of Seed Tree harvest in project area
Misc. fuels projects	Yes	1985-2010	Past/Present	Yes	Yes	Approx. 981 acres of fuels treatment. See Table 3.1.2 in Section 3.1-Forest Veg

## **V. ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED STUDY**

Federal agencies are required by NEPA to rigorously explore and objectively evaluate all reasonable alternatives and to briefly discuss the reasons for eliminating any alternatives that were not developed in detail (40 CFR 1502.14). Public comments received in response to the Proposed Action provided suggestions for alternative methods for achieving the purpose and need. Some of these alternatives may have been outside the scope of the BCLMP, duplicative of the alternatives considered in detail, or determined to be components that would cause unnecessary environmental harm. Therefore, a number of alternatives were considered, but dismissed from detailed consideration as follows:

### **A. EAST OTTER HAZARDOUS FUEL PROJECT PROPOSAL**

The East Otter Hazardous Fuels project proposed treating 3819 acres, all within the PRCWPP priority one boundary. Fuel reduction treatments proposed in this project were modified for the BCLMP to better insure that applicable wildlife habitat criteria would be met. Because the BCLMP Proposed Action includes modified treatment of the same acreages proposed in the East Otter project, consideration of the East Otter proposal as an alternative would be duplicative of the Proposed Action.

### **B. WHITETAIL HAZARDOUS FUEL PROJECT PROPOSAL**

The Whitetail Hazardous Fuels project proposed to treat 8,262 acres within the PRCWPP priority one boundary. Fuel reduction treatments proposed in this project were modified for the BCLMP to better insure that applicable wildlife habitat criteria would be met. Because the BCLMP Proposed Action includes modified treatment of the same acreages proposed in the Whitetail project, consideration of the Whitetail proposal as an alternative would be duplicative of the Proposed Action.

### **C. JANUARY 2010 PROPOSED ACTION ALTERNATIVE**

Pursuant to 36 CFR 220.5(e) the original Proposed Action (see 1/28/2010 scoping letter in project planning record) has been incrementally modified based on public comment and initial effects analysis. Following is a summary of these changes and why they were made:

1. The project purpose and need were modified to focus on identified Forest Vegetation desired stand conditions (Appendix B), fuel reduction needs identified in the PRCWPP, and Forest Plan Forest-wide management goals, standards, and guidelines.
2. Proposed treatment acreages were adjusted to address Geographic Information System (computer mapping) errors. Updated proposed treatment descriptions and acreages are displayed in Appendix B and mapped in Appendix A, Maps 1-4. Following is a summary of those changes:
  - Changing proposed NCBJ1 treatment type acreages from 582 acres to 587 acres;

- Changing proposed PCT treatment types from 114 acres to 120 acres;
  - Changing proposed CT1 treatment types from 1,271 acres to 1,267 acres; and
  - Changing proposed STR treatment types from 66 acres to 60 acres.
3. Proposed road management activities and road lengths were adjusted to address Geographic Information System errors as follows:
- Table 2.11 was created to better summarize proposed road management activities for specific route numbers. Information specified includes approximate lengths in miles, current route classifications, route classifications during the proposed timber sale, post- timber sale route classification, and activity type.
  - The total approximate length of proposed temporary roads was adjusted from 19.6 miles to 20 miles.
4. In response to public comment and initial effects analysis, design features and mitigations were either added to or modified for the Proposed Action as displayed in Table 2.15 for the following potential issues:
- Effects to heritage resources;
  - Effects to grassland vegetation, livestock grazing, grazing capacity, and existing range improvements;
  - Effects to noxious weed spread;
  - Reforestation in treatment units;
  - Pine engraver infestation susceptibility;
  - Effects to existing permanent tree growth study plots;
  - Effects to scenery resources.

## **D. NO TREATMENT IN NOXIOUS WEED AREAS ALTERNATIVE**

One public comment requested “an alternative that eliminates units that have noxious weeds present on roads within units from fire management proposals” and also requested “an alternative in the DEIS that includes land management standards that would prevent new weed infestations by addressing the causes of weed infestation.” The CNF completed a forest wide weed treatment analysis in 2006 (USDA 2006a). As discussed above under the “Other Related Efforts” section, this analysis and accompanying ROD allow for implementation of an integrated weed management strategy on all CNF lands, including the Ashland RD. The BCLMP interdisciplinary team identified existing project-area noxious weed populations (see Project Record). The interdisciplinary team also included appropriate site-specific measures to comply with agency noxious weed BMPs (Best Management Practices) (USDA 2001) and mitigate for potential weed proliferation concerns in the BCLMP area. It was therefore determined by the Responsible Official that an alternative to specifically address additional noxious weed concerns is not needed, as it would be duplicative of the measures already included in the Proposed Action and other efforts, including the 2006 CNF Final EIS for Weed Management.

## **E. MAINTAIN ALL ROADS ALTERNATIVE**

One respondent asked that, “the FS utilize the Roads Analysis Process and analyze travel management, including road obliteration, and include an alternative that would not leave any deferred or outstanding maintenance needs/BMP upgrades in analysis area watersheds.” The CNF has already completed a forest wide Roads Analysis (USDA 2003a) and designated routes for motorized travel on the Ashland RD (USDA 2009a). The Proposed Action includes road obliteration and numerous road maintenance and reconstruction actions identified in the Ashland Travel Management Record of Decision (USDA 2009a). The BCLMP interdisciplinary team identified potential road maintenance and BMP needs in the BCLMP area and they are included as design features and mitigation measures in the Proposed Action. Other road maintenance and BMP needs are being addressed through ongoing annual road maintenance or would be addressed through other site-specific projects as appropriated funding allows. It was therefore determined by the Responsible Official that an alternative to specifically address “any deferred or outstanding maintenance needs/BMP upgrades in analysis area watersheds” is not needed as it would be duplicative of the Proposed Action and other efforts, and would not meet the BCLMP purpose and need.

## **F. STRUCTURE IGNITABILITY ALTERNATIVE**

One public comment cited Cohen’s 1999 review of “current scientific evidence and policy directives on the issue of fire in the wildland/urban interface and recommended an alternative focus on structure ignitability rather than extensive wildland fuel management.” Vegetation treatment at and adjacent to structures on private lands and construction standards for privately owned structures on private lands is beyond the authority of the Forest Service and was therefore not addressed in the Proposed Action or any other alternative. While the project does not aim to reduce the chances of a fire destroying homes, implementing an action alternative would already provide some benefits in this area. The proposed treatments for this project are outside of the home ignition areas (generally 100-200’ from structure) where Fire Safe work is focused, but the project would facilitate work that has been done because the potential for an area to burn takes into account fire moving from one area to another, the rate at which fire moves across a landscape, and the intensity at which a fire burns. Decreasing the likely fire intensity in one area would have a large effect on fire movement and fire intensity in another (Graham et al. 2004). Patches of vegetation that burn relatively slower or less severely than surrounding patches can reduce fire intensity, severity, or spread rate, or may force the fire to move around them by flanking (at a lower intensity), which locally delays the forward progress of a fire (Graham et al. 2004). This would be important where fires have the potential to move from the BCLMP area onto private land and into the home ignition zone. The action alternatives include vegetative treatment around the Whitetail Ranger Station, which is the only structure on National Forest Lands in the Beaver Creek area. These treatments are intended to reduce potential for stand replacement fire burning through the area immediately adjacent to this structure and thereby reduce structure ignitability and meet the intent of Cohen’s recommendations. It was therefore determined by the Responsible Official that an alternative to specifically address structure ignitability is not needed, as it, in the case of Whitetail Ranger Station, would be duplicative of the Proposed Action.

## **G. NO COMMERCIAL TIMBER SALE ALTERNATIVE**

One respondent asked, “Why is commercial timber removal considered a viable option? Is this realistic based on recent history of proposed timber sales as well as the current condition of the US economy? If a commercial sale is not obtained within a designated timeframe what is the alternative? If a commercial sale is not feasible, discussion and presentation of the alternative would allow work to move forward without having to readdress the proposed plan.” Another respondent asserted that “the forest is healthier if left alone and away from the FS, which acts as a pimp for lumber barons.”

While the “Purpose and Need” does list numerous Forest Plan forest-wide goals and objectives, including providing flow of timber products in support of industry, a scenario in which a timber contract cannot be sold could potentially occur. The Proposed Action specifies, “In the event that a commercial timber product is not marketable, use of mechanical treatments and prescribed fire would proceed where appropriate and as allocated funding allows.” It was therefore determined by the Responsible Official that an additional alternative to specifically address project implementation without a commercial timber sale is not needed, as this suggestion is already incorporated in the Proposed Action.

## **H. PRESCRIBED BURNING ONLY ALTERNATIVE**

The Forest Service considered utilizing only prescriptive fire applications to achieve the desired condition. Initial modeling using NEXUS was used to determine if, in the current condition, prescribed fire could be used without mechanical pre-treatment. Under the current vegetative structure, spring or fall burning conditions, prescribed fire could be used to achieve the overall desired condition over a longer period of time with multiple entries. Albeit achievable, prescriptive fire applications are not as an exact a tool as mechanical methods. Not only is the mechanical method more exact in the extraction of material, it also provides for a quicker result in decreasing fire behavior in a shorter amount of time. Therefore, since fires occur yearly, and the potential for large fires continues to increase, utilizing the fastest operational platform (i.e. include both mechanical treatment and prescribed burning) to achieve the desired condition is included in the Proposed Action. The Responsible Official determined that addition of a prescribed burning only alternative is not warranted due to the potentially longer time period and imprecision of prescribed burning implementation.

## **I. NO TEMPORARY ROADS ALTERNATIVE**

The Forest Service considered use of an alternative that did not include construction of temporary roads. As discussed above under the “Prescribed Burning Only alternative,” removal of biomass from the site is necessary to allow for more precise prescribed burning implementation with retention of desired live tree canopy. It was readily determined that use of mechanical logging equipment to reduce and remove fuels in the BCLMP area would be overly expensive in the event that material removal would require skidding for long distances without construction and use of temporary roads.

## **J. MAX FUELS TREATMENT ALTERNATIVE**

The Forest Service considered an alternative that would reduce canopy cover to less than 40 percent within all established treatment units to maximize fuels reduction opportunities. This alternative was mapped and is included as Map 18 in Appendix A. However, this alternative was not considered in detail because it did not meet best science for timber harvest within goshawk PFAs (canopy cover < 40%), and would have been inconsistent with the Forest Plan.

## **VI. SUMMARY OF ENVIRONMENTAL CONSEQUENCES BY ALTERNATIVE**

Environmental consequences from the action alternatives and no action alternative are described in detail in Chapter 3, and summarized by alternative in Table 2.19 below.

**Table 2.19: Summary of Environmental Consequences by Alternative**

Effects to:	Action Alternatives (Alt A, B, & C)	No Action (Alternative D)
<p><b>Canopy layers and canopy cover</b></p>	<p><b>Similarities.</b> Proposed treatments designed to reduce surface and ladder fuels and canopy cover. Prescribed fire treatments would create small openings across the treatment types, which would create additional within stand age and size class diversity. All treatments would promote and manage for predominately single story stand conditions. No treatment areas (NT) and unburned treatment units would maintain multi story stand conditions and have the same effects as no action.</p> <ul style="list-style-type: none"> <li>• ST1 and SH1: canopy cover reduced to an average of 10 to 25%. Low risk for sustaining crown fire.</li> <li>• CT: Canopy cover reduced to an average of 25%. Low risk for sustaining crown fire.</li> <li>• NCBB, NCBJ1, NCBJ3, PCT: Canopy cover ranges from 10 to 60%. Low to high risk for sustaining a crown fire.</li> <li>• NCBJ, NCBJ2: canopy cover ranges from 30 to 70%+. Moderate to high risk for sustaining a crown fire.</li> <li>• CT1: Canopy cover averages 50%+. High risk for sustaining a crown fire.</li> <li>• NT (no treatment): Canopy cover ranges 10-70%, and would continue to increase.</li> </ul> <p><b>Alternative A and B.</b></p> <p>Effects of Alt A and B are similar. The difference is a shift of 208 acres from commercial to noncommercial treatment. Ladder fuels would still be treated in these areas. Therefore, the effects to canopy layer types are the same for A and B. Implementation of A or B would result in a landscape that would have a lower risk and be more resilient to large stand replacement wildfire compared to No Action.</p> <ul style="list-style-type: none"> <li>• 77% of the ponderosa pine stands would have stand conditions with limited canopy layers that are less conducive to fire moving into the overstory canopy. 40% of the ponderosa pine stands would have very low and low canopy cover.</li> <li>• 59% of the BCLMP 14,053 acres analysis area would have very low and low canopy cover scattered and intermingled across the landscape that would reduce the risk for a wildfire to be sustained as a crown fire.</li> <li>• Net change would be a 75% reduction in ponderosa pine stand conditions exhibiting ladder fuels or multi layer canopies and a 15% reduction in high ponderosa pine canopy cover.</li> <li>• Of the areas not treated, 35% of the ponderosa pine would average 40-69% canopy cover (high risk for sustaining crown fire) and 51% would average 70% canopy cover (high to</li> </ul>	<p>Multiple canopy layers (ladder fuels) conditions across the landscape remain the same. Currently over 97% (9,364 acres) of the existing ponderosa pine forested coverage has multiple canopy layers resulting in continual ladder of fuels to the crown. Approx. 76% of the forested landscape has canopy cover &gt; 40%, which would sustain a crown fire. Canopy cover would continue to increase with fire suppression and increase the risk or likelihood of large stand-replacement wildfire. The stands have low resiliency to a large stand replacement fire.</p>

Effects to:	Action Alternatives (Alt A, B, & C)	No Action (Alternative D)
	<p>very high risk for sustaining crown fire).</p> <ul style="list-style-type: none"> <li>• 5 to 15% of the residual trees in the ST1 and SH1 units could experience wind snap or wind throw in the first few years or until the trees become more wind firm.</li> </ul> <p><b>Alternative C:</b></p> <p>No treatment in goshawk PFAs and other commercial treatment shifts to noncommercial treatment in other areas. No treatment increases by 2,449 acres compared to A and B. 45% of ponderosa pine no treatment acres have 40 to 69% average canopy cover (high risk for sustaining a crown fire), and 42% have average canopy cover <math>\geq 70\%</math>. High risk for sustaining a crown fire. Multi layer canopy type would be reduced by 52%, two-layer canopy type would be reduced by 1% and one layer canopy type would be increased by 53% from the existing conditions. There would be approx. 23% more multi layer canopy conditions and 23% less one layer canopy conditions in this alternative compared to Alt A and B. Ladder fuels remain in the PFAs.</p>	
<b>Understory Productivity</b>	<p><b>Similarities:</b> Increased sunlight, increased soil moisture, and decreased needle mat stimulate and rejuvenate the understory. Effects are compared to a baseline productivity level with 0-20% canopy cover, which have the greatest levels of understory productivity (Shepperd &amp; Battaglis 2001).</p> <p>Post treatment, ST1, SH1, STR1, CT, SC, PCT stands would have a canopy cover less than 60% (ranging 5 – 30%), which would approximate a 56-64 % reduction in understory production potential compared to the baseline. Understory productivity is maximized with the ST1 and SH1 treatments. Post treatment, CT, NCBJ, NCBJ1, NCBJ2, and NCBJ3 stands would have a canopy cover greater than 60%, which would approximate an 83-86% reduction in understory production potential compared to the baseline. Prescribed fire treatment in combination with mechanical treatment would further increase understory productivity due to a nutrient flush and added overstory mortality and crated openings.</p> <p><b>Alternative A and B:</b> The effects of Alt A and B are similar, and result in a shift of 208 acres from commercial to noncommercial treatment under Alt B. Of the 208 acres, 179 acres of CT, SH1, and ST1 treatments become NCBJ and NCBJ2. These 179 acres could have canopy cover in excess of 60%, which would have an 83 to 86% reduction in understory production as compared to the baseline.</p> <p><b>Alternative C:</b> There are 1,757 acres less commercial harvest and 603 acres less noncommercial treatments compared to A. There would be no improvement opportunity in understory production in these areas. The effect would be greatest in the goshawk PFAs, and</p>	<p>Currently, 76% of the ponderosa pine landscape has a canopy cover <math>&gt; 40\%</math>, which reduces potential understory production by approx. 56 to 86%. Stands would continue to grow with continued fire suppression and lack of disturbance. Understory vegetation is suppressed, resulting in decline in vigor , reduced resiliency to regain historical composition, reduced amount of available nutrients, and leads to forest stands that are unhealthy and prone to insect and disease epidemics.</p>

Effects to:	Action Alternatives (Alt A, B, & C)	No Action (Alternative D)
	is similar to no action. A second prescribed fire 10-15 years after the first would have an added benefit of stimulating understory production in treated areas.	
<b>Large Woody Debris</b>	<p><b>Similarities:</b></p> <ul style="list-style-type: none"> <li>• Treatment would retain a minimum of 3 to 4 tons of CWD.</li> <li>• Large woody debris would be added to the forest floor from natural disturbances. Modeling showed over 19 tons per acre would be added to the forest floor over a 20-year period.</li> <li>• Following prescribed fire in NCBJ, NCBJ1, SCNC and PCT treatments, large woody debris could exceed 20 tons per acre and upwards of 30 tons per acres with 7 to 10 years as fire killed trees fall down. This could occur on 5 to 10 % of treated areas and in areas up to 2 acres in size. These small areas contribute towards a mosaic of diversity across the landscape.</li> </ul> <p>Alternative C treats 25% fewer forested areas compared to A and B. The effects in the untreated areas are similar to No Action.</p>	Currently, surface fuels average 5 to 8 tons per acre across the landscape with pockets of fuel loads ranging 15-20 tons per acre. With no action, fuels are expected to increase in localized areas, making those areas less resistant to wildland fire.
<b>Insect &amp; Disease Susceptibility</b>	<p>Maintain low to moderate susceptibility levels in treated stands. Effects differ by amount of acres treated. Greatest reduction in risk in ST1, SH1, STR, STR1, LIB, SC, SCNC, and CT including:</p> <ul style="list-style-type: none"> <li>• 1,476 acres (15.4%) Alt A.</li> <li>• 1,307 acres (13.6%) Alt B.</li> <li>• 984 acres (10.2%) Alt C.</li> </ul> <p>CT1 units retain the highest large tree stem densities post treatment and could potentially have the highest risk for severe beetle mortality over time. Alternative C treats 25% fewer forested areas compared to A and B. These untreated areas would continue to grow and be at moderate and trend to high susceptibility, similar to no action.</p>	Insect and disease currently at endemic levels. Forest succession, growth, and fire suppression would move the area into moderate and trending towards high risk for insect and diseases.

Effects to:	Action Alternatives (Alt A, B, & C)						No Action (Alternative D)
<b>Risk of stand replacement fire:</b>  As measured by torching and crowning index	Effects of Alt. A and B are similar. Approximately 36% of the analysis area would be susceptible to potential stand replacement fire. Under Alternative C, approximately 43% of the analysis area would be susceptible to potential stand replacement fire.						Currently, 75% of the forested landscape in the project area has a closed canopy with ladder fuels extending to the ground surface in many areas and a ground surface fuel readily susceptible for an ignition to occur from natural or human source. A ground fire could easily transition to crown fire. Once a fire is in the crown fuels, only a moderate, 13 mph wind speed would likely carry a crown fire. Thirteen to fifteen mph winds are almost a daily occurrence on the Ashland RD throughout the fire season.
	Treatment Categories	Acres Treated	Canopy Cover	Canopy Base Height	20 – Foot Wind Speed to Initiate Torching (Torching Index)	20 – Foot Wind Speed to Sustain Active Crown Fire (Crowning Index)	
	Commercial Thin (CT)	A: 242 B: 185 C: 156	23%	30	83.2	31.2	
	Commercial Thin/Regen (ST1, SH1)	A: 1,027 B: 905 C: 703	23%	30	83.2	31.6	
	Non Commercial	A: 7,694 B: 7,902 C: 7,123	35%	16	47.5	24.4	
	Comm. Thin Wildlife (CT1)	A: 1267 B: 1,238 C: 0	52%	12	36.6	15.4	
	Post Replacement (STR, STR1, PCT, LIB)	A: 278 B: 278 C: 78	52%	10	30.9	15.4	
	No Treatment	A: 3,545 B: 3,545 C: 5,993	69%	5	15.5	13.9	

Effects to:	Action Alternatives (Alt A, B, & C)	No Action (Alternative D)																								
<p><b>Fire Regime Condition Class (FRCC)</b></p> <p>As measured by % of each vegetative structural development class within the project area</p>	<p>The action alternatives would have a positive benefit on FRCC because it provides a process for moving the landscape closer to reference conditions. Under the action alternatives, the Fire Regime Condition Class would be reduced to a Condition Class 2. Alt C treats 15% less than A and B, and thus the overall effectiveness is reduced compared to A and B.</p> <p><b>BCLMP- Post-Treatment FRCC Distribution.</b></p> <table><tr><th>Structural Class</th><th>Reference Percent</th><th>Existing Percent</th><th>Proposed Treatment Percent</th></tr><tr><td>Post Replacement</td><td>10%</td><td>1%</td><td>Alt A: 12% Alt B: 11% Alt C: 10%</td></tr><tr><td>Mid Development Closed</td><td>15%</td><td>2%</td><td>Alt A: 1% Alt B: 1% Alt C: 0%</td></tr><tr><td>Mid Development Open</td><td>25%</td><td>2%</td><td>Alt A: 4% Alt B: 4% Alt C: 3%</td></tr><tr><td>Late Development Open</td><td>40%</td><td>21%</td><td>Alt A: 47% Alt B: 48% Alt C: 44%</td></tr><tr><td>Late Development Closed</td><td>10%</td><td>74%</td><td>Alt A: 36% Alt B: 36% Alt C: 43%</td></tr></table>	Structural Class	Reference Percent	Existing Percent	Proposed Treatment Percent	Post Replacement	10%	1%	Alt A: 12% Alt B: 11% Alt C: 10%	Mid Development Closed	15%	2%	Alt A: 1% Alt B: 1% Alt C: 0%	Mid Development Open	25%	2%	Alt A: 4% Alt B: 4% Alt C: 3%	Late Development Open	40%	21%	Alt A: 47% Alt B: 48% Alt C: 44%	Late Development Closed	10%	74%	Alt A: 36% Alt B: 36% Alt C: 43%	<p>Forested areas would remain FRCC 3, meaning there is a high departure from historical (reference) conditions.</p>
Structural Class	Reference Percent	Existing Percent	Proposed Treatment Percent																							
Post Replacement	10%	1%	Alt A: 12% Alt B: 11% Alt C: 10%																							
Mid Development Closed	15%	2%	Alt A: 1% Alt B: 1% Alt C: 0%																							
Mid Development Open	25%	2%	Alt A: 4% Alt B: 4% Alt C: 3%																							
Late Development Open	40%	21%	Alt A: 47% Alt B: 48% Alt C: 44%																							
Late Development Closed	10%	74%	Alt A: 36% Alt B: 36% Alt C: 43%																							
<p><b>Detrimental soil disturbance</b></p>	<p>&lt;15% per activity unit under all action alternatives</p>	<p>No new disturbance</p>																								
<p><b>Water Yield</b></p>	<ul style="list-style-type: none"><li>• Treatments that remove less than 17 percent of the overstory canopy of a timber stand have no effect on water yield. Proposed treatments that fall into this category include NCBJ2, NCBJ3, PCT, SCNC and STR1</li><li>• Twenty percent canopy removal results in minimal ECA acres. Proposed treatments that fall into this category include NCBB, NCBJ, NCBJ1, SC, and STR</li><li>• Treatments with the highest level of total canopy removal (with fuel treatment burning) include CT (70%), CT1 (50%), LIB (85%), SH1 (70%) and ST1 (95%). Where the combination of harvest/thinning and burning exceeds 17 percent canopy removal of the stand, ECA acres were calculated by watershed and summarized below.</li></ul>	<p>Although vegetation treatments would not occur under this alternative, future natural disturbance events (wildfire, windthrow, flood) are still expected to occur. Ongoing human activities (grazing, agriculture, vehicle travel) are also expected to continue throughout the watersheds. All of these events and activities can affect hydrologic processes and beneficial uses.</p>																								

<b>Equivalent clear-cut area acres (ECA)</b>  (See p. 3.141 for breakdown by watershed)	<table><tr><th rowspan="3">Water-sheds</th><th colspan="9">ECA – All ownerships</th></tr><tr><th colspan="3" rowspan="2">Vegetation treatment and wildfire ECA acres</th><th colspan="3" rowspan="2">Road ECA Acres<sup>1</sup></th><th colspan="3" rowspan="2">Percent of Watershed in ECA Condition</th></tr><tr></tr><tr><th>Total Acres</th><th>Alt A</th><th>Alt B</th><th>Alt C</th><th>Alt A</th><th>Alt B</th><th>Alt C</th><th>Alt A</th><th>Alt B</th><th>Alt C</th></tr><tr><td>128,578</td><td>17,072</td><td>16,912</td><td>16,206</td><td>784</td><td>779</td><td>765</td><td>13</td><td>13</td><td>13</td></tr></table>										Water-sheds	ECA – All ownerships									Vegetation treatment and wildfire ECA acres			Road ECA Acres <sup>1</sup>			Percent of Watershed in ECA Condition			Total Acres	Alt A	Alt B	Alt C	Alt A	Alt B	Alt C	Alt A	Alt B	Alt C	128,578	17,072	16,912	16,206	784	779	765	13	13	13	The ECA estimates for past timber harvest, wildfire and existing roads suggest that these existing disturbances are too low to cause measureable increases in water yield or streamflows. In the absence of large disturbance events, ECA acres for past harvest and wildfire would decline through recovery of the timber stands.
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<b>Sediment Yield</b>	<ul style="list-style-type: none"><li>• Seven short road segments totaling approximately 2.1 miles would be obliterated during or after treatment activities cease. These actions would reduce road densities within the Upper Beaver and Little Pumpkin Creek watersheds, thereby reducing the risk of cumulative watershed effects over the long-term.</li><li>• Short-term effects may involve new soil disturbance from ripping compacted road segments where necessary, but stabilization should occur soon after as these areas revegetate.</li><li>• Of the commercial treatments, approximately 756 to 1,762 acres would be tractor yarded. Of the non-commercial treatments, low ground pressure machinery could be used on 1,849 to 2,179 acres on slopes less than 30 percent. Following standard BMPs, long-term soil disturbance and transport relative to frequency and location of skid trails and landings, would be minimized.</li><li>• Non-commercial thinning treatments that would not utilize machinery are proposed on 1,767 to 2,206 acres. Hand felling and piling in these treatments is not expected to result in any measurable ground disturbance, except for small areas where hand piles are burned.</li><li>• Prescribed burning is proposed on 3,506 to 3,594 acres and involves mainly non-forested vegetation types where fuel loads are relatively low. This burning is expected to result in minor consumption of the duff layer and only scattered exposure of surface soils where fuels were concentrated. Overall, fire severity on soils is expected to be low.</li></ul>										<p>There would be no change in road impacts as a result of the No Action alternative. Except for a small number of localized impacts, the existing transportation system within the BCLMP area has minimal influence on water quality. Most road segments are located along ridges or mid slopes, or are well vegetated with minimal vehicle use. Their location is of sufficient distance from most perennial streams to allow for dispersion of surface flow and deposition of sediment prior to reaching surface water.</p> <p>This alternative does not reduce fuel loads and therefore continues the current level of risk for stand replacement wildfire. In the event of wildfire, and dependent on the intensity and area burned, accelerated soil erosion is likely, particularly if hydrophobic soils are formed. Significant channel adjustments from overland flow and sedimentation could be expected, especially during high intensity precipitation events. These effects would likely reach perennial stream segments on and off forest.</p>																																							
<b>Channel, Wetland and</b>	Short, localized riparian systems do exist and do support wetland plants and associated habitat. The risk of sediment delivery to these systems is low due to adequate filter										Risk of impact to soil and hydrologic functions from stand replacement wildfire																																							

<b>Floodplain Functions</b>	distances and implementation of SMZ regulations and BMP’s. The risk of affecting floodplain or riparian wetland function is low because the activities are not expected to substantially influence hillslope or channel hydrology, or sediment production and transport.	would continue to increase as fuel loads and summer temperatures increase in the future.																																										
<b>Economics</b> Volume-CCF PNV (2009) Total Revenue	<table><tr><td></td><td><b>Alt A</b></td><td><b>Alt B</b></td><td><b>Alt C</b></td><td><b>Alt D</b></td></tr><tr><td><b>Volume – CCF</b></td><td>22,495</td><td>21,803</td><td>9,255</td><td>0</td></tr><tr><td><b>PNV (2009)</b></td><td>\$34,176</td><td>\$71,589</td><td>-7,207</td><td>0</td></tr><tr><td><b>Total Revenue</b></td><td>\$151,176</td><td>\$189,686</td><td>\$42,018</td><td>0</td></tr></table>						<b>Alt A</b>	<b>Alt B</b>	<b>Alt C</b>	<b>Alt D</b>	<b>Volume – CCF</b>	22,495	21,803	9,255	0	<b>PNV (2009)</b>	\$34,176	\$71,589	-7,207	0	<b>Total Revenue</b>	\$151,176	\$189,686	\$42,018	0																			
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<b>Sensitive Plants</b>	<table><tr><td><b>Species</b></td><td><b>Effects Components</b></td><td><b>Alt A Proposed Action</b></td><td><b>Alt B Preferred Alternative</b></td><td><b>Alt C No Treatment in Goshawk PFAs</b></td><td><b>Alternative D - No Action</b></td></tr><tr><td rowspan="2">Heavy sedge - <i>Carex gravida</i> var. <i>gravida</i> (Known – Project Area)</td><td>Vulnerability</td><td>Low to Low-Moderate</td><td>Low to Low-Moderate</td><td>Low to Low-Moderate</td><td>Low</td></tr><tr><td>Effects Determination</td><td>MIIH<sup>1</sup></td><td>MIIH</td><td>MIIH</td><td>NI<sup>2</sup></td></tr><tr><td rowspan="2">Barr’s milkvetch - <i>Astragalus barrii</i> (Known - Ashland RD)</td><td>Vulnerability</td><td>Low</td><td>Low</td><td>Low</td><td>Low</td></tr><tr><td>Effects Determination</td><td>NI</td><td>NI</td><td>NI</td><td>NI</td></tr><tr><td rowspan="2">Nuttall Desert-Parsley - <i>Lomatium nuttallii</i> (Known - Ashland RD)</td><td>Vulnerability -</td><td>Low</td><td>Low</td><td>Low</td><td>Low</td></tr><tr><td>Effects Determination</td><td>NI</td><td>NI</td><td>NI</td><td>NI</td></tr></table>					<b>Species</b>	<b>Effects Components</b>	<b>Alt A Proposed Action</b>	<b>Alt B Preferred Alternative</b>	<b>Alt C No Treatment in Goshawk PFAs</b>	<b>Alternative D - No Action</b>	Heavy sedge - <i>Carex gravida</i> var. <i>gravida</i> (Known – Project Area)	Vulnerability	Low to Low-Moderate	Low to Low-Moderate	Low to Low-Moderate	Low	Effects Determination	MIIH <sup>1</sup>	MIIH	MIIH	NI <sup>2</sup>	Barr’s milkvetch - <i>Astragalus barrii</i> (Known - Ashland RD)	Vulnerability	Low	Low	Low	Low	Effects Determination	NI	NI	NI	NI	Nuttall Desert-Parsley - <i>Lomatium nuttallii</i> (Known - Ashland RD)	Vulnerability -	Low	Low	Low	Low	Effects Determination	NI	NI	NI	NI
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<b>Range</b>	Action alternatives would increase the amount of available forage and cause a shift in livestock distribution patterns by increasing the number of acres of transitory range. The positive effects of this transitory range would diminish after 20 years. Allotments affected by action alternatives are in pasture systems that would allow deferment to		Current livestock grazing would continue. Grass species such as Idaho fescue and threadleaf sedge are fire-sensitive species and cannot tolerate sever fire conditions, which																																									

<sup>1</sup> MIIH: May Impact Individuals or Habitat but will not Likely Contribute to a trend towards Federal Listing or Loss of Viability to the Population or Species

<sup>2</sup> NI = No Impact

	unburned areas.	could occur during a wildfire. Tree colonization would likely continue and reduce available forage. A stand replacement fire could damage range improvements such as fences and stock water.
<b>Noxious Weeds</b>	<p>The BCLMP area includes seven spotted knapweed infestations, which are being monitored and treated on a yearly basis. There is a possibility that the Action Alternatives could increase the spread of these infestations and/or create other infestations. The effects of Alternative A, B, and C are similar and only varying by the amount of ground disturbance because of the decrease in acres treated. The probability of new weed infestations would decrease with Alternative B and C but the same mitigation measures and Best Management Practices would be in place, except for one under Alternative C. Temporary road 23 would be reduced in size in Alternative B and not utilized in Alternative C. The mitigation measures set for this temporary road would not be utilized if the temp road were not used. Treatment sites would be monitored yearly for noxious weed infestations, and any noxious weeds that are found would be treated in accordance with the 2006 Weed EIS and in compliance with the Forest Plan.</p>	<p>There would be no direct effects of the No Action alternative. An indirect effect could be the effect of wildfire on the spread of noxious weeds. Assuming the BCLMP area could have a large, severe wildfire occur; it could pose a severe problem. Because wildfires are typically more severe than prescribed fire, more bare ground is exposed and could increase the chance for weed infestations. When comparing a prescribed fire with a wildfire, it is possible to say that the effects of burning and suppression could be managed better to decrease the chances of noxious weed spread in a prescribed scenario.</p>
<b>Scenery Resources</b>	<p>Alternative A proposes the maximum amount of treatment, and could therefore potentially have the most impact to scenery resources. Alternatives B and C drop treatment units (no additional units are added), propose less treatment than Alternative A, and therefore could potentially affect scenery resources to a lesser degree than Alternative A.</p> <p>The short-term effects of the Action Alternatives would include: slash piles, linear disturbance corridors due to the construction and rehabilitation of temporary roads and skid trails, evidence of landing areas, freshly cut stumps, and painted boundary trees. Within a couple of years, ground vegetation would re-establish in distributed areas. Stump cuts would fade and become less visible and painted treatment boundaries would fade.</p> <p>Long-term effects to the scenic resources would be positive. Ponderosa forests would be more open with an herbaceous understory. In addition, deciduous tree species (green ash and aspen) would be reinvigorated. The mosaic of vegetation would be more diverse, with increased variety in understory species and a more diverse structure and age class mix of overstory vegetation.</p> <p>Long term, the objectives for scenery would be met. Mitigation measures would play a</p>	<p>Natural disturbance regimes and events such as wildfires, winds, insects and disease would continue to shape and change the District's vegetation landscapes. The existing and continued accumulation of fuels along with the area's climate means the BCLMP area is susceptible to a large high severity fire. Areas impacted by high severity fires are likely to take decades to re-vegetate with ponderosa pine. .</p> <p>Large, treeless landscapes within the BCLMP area would be outside the range of historic conditions/landscapes. Consequently, until these areas regenerate with ponderosa pine, they are likely to be inconsistent with Forest Plan VQO's within the BCLMP area. This is because the scenic resources will have significantly deviated from the appearance of a</p>

	large role in ensuring proposed seed tree, liberation, and shelterwood cuts meet VQO's. The size shape and edge treatments of created openings, along with slash clean up in sensitive foregrounds would be critical. The obliteration and rehabilitation of proposed temporary roads would also be key to meeting long-term objectives for scenery.	historic, fire-adapted ponderosa pine landscape.
<b>Recreation</b>	The Action Alternatives have the potential to displace big-game and turkey hunters in the BCLMP area, but this impact is expected to affect individual hunters and not hunting overall on the Ashland RD or in Hunting Unit #704. There would likely be some cumulative impacts to hunting opportunities and hunter displacement from other vegetation management and prescribed fire activities on the Ashland RD that occur during the same timeframe. Under Alternatives B (Preferred Alternative) and C, Roads 41338 and 44094 would be closed to motorized use during the hunting season to increase big game security (September 1 – December 1). While Roads 41338 and 44094 would be closed to motorized use during the hunting season, they would remain open to foot and stock use. No adverse long-term impacts on hunting opportunities or hunters anticipated.	The No Action alternative has no short-term (i.e. project implementation) effects, but does have a higher risk for long-term displacement of big-game and turkey hunters in the BCLMP area than the Proposed Action alternative due to the higher potential for large, high-severity wildfires.
<b>Cultural Resources</b>	<p><b>Alternative A &amp; B:</b> Under Alternatives A and B, 11 sites are located where there would be no treatment activities. Non-treatment of these 11 sites would result in continued accumulation of fuel loads that, in the event of a wildfire, would result in an increase in the intensity of fire across the sites. Two historic sites—consisting of several standing wood structures at the Sutton Homestead and an old cedar livestock tank—contain combustible materials that would be especially vulnerable to fuel loading and wildfire.</p> <p>Sixty-seven sites are located within areas proposed for one or more of the treatments types. Seven of these sites are recommended eligible for nomination to the NRHP. Three historic sites—including a cedar livestock tank, a site containing the remains of historic buildings, and the NRHP eligible Whitetail Cabin—contain combustible materials. Seven sites contain culturally sensitive cairn features and a small rock shelter contains a possible pictograph.</p> <p><b>Alternative C:</b> Under the No Treatment in Goshawk PFAs Alternative, 26 sites are located where there would be no treatment activities. Non-treatment of these 26 sites, and non-use of the historic Whitetail Creek Road, would result in continued accumulation of fuel loads that, in the event of a wildfire, would result in an increase in the intensity of fire across the sites. The Sutton Homestead, a cedar tank, one culturally sensitive cairn, a small rock shelter containing a possible pictograph, and the NRHP eligible Whitetail Cabin would be especially vulnerable to fire.</p> <p>Fifty-two sites are located within areas proposed for one or more of the treatment types.</p>	<p>While there would be no new ground disturbing activities associated with this No Action alternative, in the long-term the probability of wildfires in the BCLMP Area and surrounding areas would be likely. Should a wildfire occur, cultural resource sites, especially those containing combustible materials such as historic buildings and wood structure remains would be consumed and destroyed by fire. Even sites such as cairns, lithic artifact scatters, and pictographs would be damaged or destroyed by long-term/high-intensity fire that cause crazing or spalling of lithic and stone surfaces. These effects represent irreparable damage and loss of important archaeological information.</p> <p>Wildfire suppression activities such as dozer line construction may also damage or destroy cultural resource sites. The improved ground surface visibility following a wildfire event may lead to illegal artifact collecting. Erosion, due to loss of vegetative cover, may also result</p>

	<p>Five sites are recommended eligible for nomination to the NRHP, two historic sites contain combustible materials (building remains and a cedar tank), and six sites contain culturally sensitive cairn features.</p> <p><b>Common to All Action Alternatives:</b> All of cultural sites would be treated with prescriptions designed to remove, reduce, or mitigate effects to cultural resources. Treatments at sites containing combustible materials, such as Whitetail Cabin, the seven culturally sensitive cairn features, and the pictograph/rock shelter would be monitored by an archaeologist, either during or following the treatment, in order to insure these sites are not disturbed and to monitor the activity and effect of the treatment.</p> <p>Reducing or eliminating the occurrence of devastating wildfires within the BCLMP Area would result in the reduction in the number of cultural resources exposed, damaged or destroyed following a wildfire event and a reduction or elimination of loss of valuable information contained within sites.</p>	in damage to cultural resource sites.
<b>Carbon Flux</b>	<p>Proposed treatments would temporarily alter carbon stores and carbon flux rates within treatment units. These local changes are similar to those that occur under natural forest disturbance events such as fire, wind, or insect epidemics.</p> <p>The short-term change in carbon stocks and sequestration rates resulting from the Action Alternatives would be infinitesimal on global and national scales, as are any potential long-term benefits. In conclusion, while this project would affect carbon sequestration on a local level, it would overall have no discernable impact on atmospheric concentrations of greenhouse gases or climate change.</p>	<p>Because of increased potential for a large wildfire under the No Action alternative, such a disturbance event could potentially lead to long-term reduction in the amount of forested landscape present in the BCLMP area and subsequent reduction in carbon sequestration rates due to grassland conversion.</p> <p>Any change in carbon stocks and sequestration rates resulting from the No Action would be infinitesimal on global and national scales. In conclusion, while this project would affect carbon sequestration on a local level, it would overall have no discernable impact on atmospheric concentrations of greenhouse gases or climate change.</p>
<p><b>Black-footed ferret</b></p> <p><b>Black-tailed prairie dog</b></p> <p><b>Burrowing owl</b></p>	<p>The action alternatives MAY AFFECT, BUT IS NOT LIKELY TO ADVERSELY AFFECT THE BLACK-FOOTED FERRET OR THEIR HABITAT for the following reasons:</p> <ol style="list-style-type: none"> <li>1) Black-footed ferrets are not known to occur in the area;</li> <li>2) The BCLMP area does not support an adequate prey base to support ferrets;</li> <li>3) The amount of occupied black-tailed prairie dog habitat continues to moderately</li> </ol>	<p>Black-footed ferrets are not known to occur in the BCLMP area and the cumulative analysis area does not support an adequate prey base to support ferrets.</p> <p>Due to the rolling topography of the BCLMP area, most, if not all, suitable prairie dog habitat is occupied on NFS lands in the project area. The impacts of existing roads</p>

	<p>increase each year on the District;</p> <p>4) Direct habitat loss is not a factor under any alternative because construction of temporary routes would not affect existing prairie dog colonies and the proposed vegetation treatments do not negatively affect black-footed ferret habitat; and</p> <p>5) None of the alternatives propose increased access to black-footed ferret, black-tailed prairie dog or burrowing owl habitat.</p> <p>The action alternatives also MAY IMPACT INDIVIDUALS OR HABITAT BUT IS NOT LIKELY TO CAUSE A TREND TO FEDERAL LISTING OR LOSS OF VIABILITY FOR BLACK-TAILED PRAIRIE DOGS AND BURROWING OWLS based on the above rationale for ferrets along with the fact that prairie dogs would continue to be killed by recreational shooting until the State imposes an anti-shooting rule.</p>	<p>that provide access for prairie dog shooters may continue to have a negative impact on prey density. Existing prairie dog towns are likely to expand slowing under the existing condition, in the absence of control action or plague outbreaks. Burrowing owls could potentially respond positively to increases in active prairie dog town acreages.</p> <p>In the event of wildfire, active prairie dog towns and low vegetative condition tend to function as fuel breaks on the landscape. Any disturbed areas on suitable slopes and soils within grasslands are potential areas for new colony establishment.</p>
<b>Northern goshawk</b>	<p>Alternative A and B would have a neutral impact in the short-term because habitat is maintained, but improve habitat in the long-term because of improved resiliency to wildfire.</p> <p>Alternative C and D would have a neutral impact for Northern goshawks in the short-term because habitat is maintained and a neutral impact in the long-term because the risk of stand replacing wildfire would continue within PFA stands. This determination is based upon the following rationale:</p> <p>1) Alternatives A, B, C, and D, and the resultant PFA and foraging area habitat parameters, are consistent with the Northern Goshawk, Northern Region Overview (Brewer et al. 2009), Reynolds guidelines (Reynolds et al. 1992), and recent information (Reynolds, R, 2011.03.04);</p> <p>2) Alternatives A and B conserves (eliminates from treatment) and maintains occupied nest areas and high levels of potential nesting habitat in the short-term and improves habitat because the risk of stand replacing fire would be reduced;</p> <p>3) Alternatives C and D conserves (eliminated from treatment) and maintains occupied nest areas and high levels of potential nesting habitat in the short-term and maintains it in the long-term;</p> <p>4) Alternatives A, B, and C adequately protects nesting goshawks through BCLMP design criteria and activity timing restrictions;</p> <p>5) Alternative A, B, C, and D maintain forest- and district-wide goshawk habitat that is widely distributed;</p> <p>6) Alternatives A, B, and C maintains suitable goshawk habitat in the BCLMP while providing measures to reduce large, stand replacement fires; and</p> <p>7) Treatments are designed to increase landscape resiliency to wildfire thereby maintaining and improving habitat for Habitat Indicator Species / Management Indicator Species over time (USFS, 1986, P. 18).</p>	
<b>Big game</b>	<p>Canopy Closure - Alternatives A, B, and C would remove some cover, but maintain adequate cover in the short-term, though Alternative A retains slightly less than B and C. Alternative A, B, and C would potentially improve forested cover in the long-term in terms of increased resiliency to wildfire. While Alternative B would treat goshawk PFA areas (CT1) and Alternative C would not treat PFA areas, Alternatives B and C both retain over 50% crown cover in PFAs and therefore big game cover (&gt;40%) in PFAs. Alternative D would retain existing cover in the short-term and existing resiliency to wildfire leaving it at risk to stand replacing wildfire than Alternatives A, B,</p>	

	<p>or C.</p> <p>Road Density - Alternative A and D would have a neutral impact in terms of security areas and road density because it maintains current conditions in the short- and long-term which are below desirable levels. Alternative B and C would seasonally remove motorized road/trail densities (seasonal closure on ATV road) on two roads during the archery/big game hunting season. Alternative B and C would improve elk security areas from 16% to 28 towards the goal of &gt;30%, (Hillis et al. 1991) and reduce road densities from 1.43 to 0.97 miles/mi<sup>2</sup> which is below the goal of &lt;1.0 mile recommended by Lyon and Christensen (2002). Alternative A maintains habitat whereas Alternative B and C both maintain and improve habitat (USFS1986, P.17-18, e.).</p> <p>Other - Alternative A, B, and C would protect and maintain habitat for existing and potential elk wallows (See design features #7, 12 and 16 on page 2.22-2.23). Alternatives A, B, and C would all through prescribed fire improve forage on NFS lands in the short-term for wildlife including elk, deer and habitat (uneven-age structure, small tree groups within a matrix of grass, forb and shrubs) for the wild turkey (pine seed, forbs, mosaic of habitats). The treatment is consistent with the Montana Final Elk Management Plan which identifies “encourage elk to use forage on public lands more than on private.” And further to work with FWP to ensure planned prescribed fires benefit elk and elk habitat.</p> <p>My determination is based on the following rationale:</p> <ol style="list-style-type: none"> <li>1) the effects are consistent with goals and objectives of the Montana Final Elk Management Plan (MDFWP 2005);</li> <li>2) the effects are consistent with Hillis et al. (1991);</li> <li>3) the proposed action is designed to create a mosaic of openings (ST, SH), and maintain overstory canopy (goshawk nest stands), stands with high crown cover (CT1) and, areas of irregular terrain, irregular canopy, and structure that promote a patchwork of understory diversity, habitat conditions for big game;</li> <li>4) big game species will be adequately protected through BCLMP Design Features and Mitigation (#4, 7, 12, 15-16) including timing restrictions;</li> <li>5) big game habitat is widely distributed;</li> <li>6) the BCLMP maintains suitable big game habitat while providing measures to reduce large, stand replacement fires;</li> <li>7) big game numbers are stable or increasing in the cumulative effects analysis area;</li> <li>8) implementation of Alternative B or C is also endorsed by MTFWP (12-28-2010); and 9) Treatments are designed to increase landscape resiliency to wildfire thereby maintaining and improving habitat for Habitat Indicator Species / Management Indicator Species over time (USFS, 1986, P. 18).</li> </ol>	
<b>Black-backed woodpecker &amp; Snags</b>	<p>The action alternatives: MAY IMPACT INDIVIDUALS OR HABITAT BUT IS NOT LIKELY TO CAUSE A TREND TO FEDERAL LISTING OR LOSS OF VIABILITY FOR BLACK-BACKED WOODPECKERS for the following reasons:</p> <ol style="list-style-type: none"> <li>1) The resultant snag habitat retention parameters are consistent with the Northern Region Snag Management Protocol (USFS 2000a);</li> <li>2) The prescriptions from intermediate (CT, CT1, SC, and SCNC) harvest, regeneration harvest, and prescribed burning are designed to maintain the largest overstory trees and provide a source for snag recruitment;</li> </ol>	<p>Under the No Action alternative, black-backed woodpecker and snag habitat would remain unchanged for the short-term. However, based on fire history for the district and the continued forest succession, growth and structure development, the likelihood and risk of a large stand-replacement wildfire would remain. In this event, the availability of black-backed</p>

	<p>3) Habitat for black-backed woodpeckers and other woodpeckers would be adequately protected through BCLMP design criteria and activity;</p> <p>4) Forest- and district-wide black-backed woodpecker habitat is widely distributed;</p> <p>5) the BCLMP maintains suitable black-backed woodpecker habitat while providing measures to reduce large, stand replacement fires (provides for future large, mature trees); and</p> <p>6) Treatments are designed to increase landscape resiliency to wildfire thereby maintaining and improving habitat for black-backed woodpecker /Habitat Indicator Species / Management Indicator Species over time (USFS, 1986, P. 18).</p>	<p>woodpecker habitat, primarily snag habitat, would be greatly increased throughout the BCLMP area. However, future snag recruitment would be reduced over the long-term. The amount and location of future wildfire impacts to black-backed woodpecker habitat is not reliably predictable due to the variables such as weather, fuel moisture, and success of fire suppression operations.</p>
<b>Bats</b>	<p>The action alternatives MAY AFFECT, BUT IS NOT LIKELY TO ADVERSELY AFFECT THE LONG-EARED MYOTIS, LONG-LEGGED MYOTIS, PALLID BAT, SPOTTED BAT AND TOWNSEND'S BIG-EARED BATS OR THEIR HABITATS for the following reasons:</p> <p>1) The resultant snag habitat retention parameters are consistent with the Northern Region Snag Management Protocol (USFS 2000a);</p> <p>2) The prescriptions from intermediate (CT, CT1, SC, and SCNC) harvest, regeneration harvest, and prescribed burning are designed to maintain the largest overstory trees and therefore provide a source of live and dead roosting sites for bats;</p> <p>3) Habitat for snag and mature forest associated species would be adequately protected through BCLMP design criteria and mitigation;</p> <p>4) Forest- and district-wide bat habitat is widely distributed;</p> <p>5) The proposed treatments would not impact caves, rock crevices or rocky outcrops;</p> <p>6) The BCLMP maintains suitable bat habitat while providing measures to reduce large, stand replacement fires (provides for future large, mature trees); and</p> <p>7) Treatments are designed to increase landscape resiliency to wildfire thereby maintaining and improving habitat for dependent species.</p>	<p>Under the no action alternative, bat roosting and foraging habitat would remain unchanged for the short-term. However, based on fire history for the district (see fuels report) and the continued forest succession, growth and structure development (see forest vegetation report), the likelihood and risk of a large stand-replacement wildfire would remain as it currently exists. In this event, the availability of roosting habitat, primarily in the form of large, live trees, would be reduced throughout the BCLMP area. Future snag recruitment would also be reduced over the long-term. The amount and location of future wildfire impacts to bat habitat is not reliably predictable due to the variables such as weather, fuel moisture, and success of fire suppression operations.</p>
<b>Migratory Birds</b>	<p>The action alternatives MAY AFFECT, BUT IS NOT LIKELY TO ADVERSELY AFFECT THE LOGGERHEAD SHRIKE OR THEIR HABITAT and would have a NEUTRAL IMPACT ON GOLDEN EAGLE, MERLIN, BULLOCK'S ORIOLE, YELLOW WARBLER, OVENBIRD, SPOTTED TOWHEE, BREWER'S SPARROW AND SHARP-TAILED GROUSE for the following reasons:</p> <p>1) The proposed action is designed to create a mosaic of openings (ST, SH), and</p>	<p>Under the no action alternative, migratory bird nesting and foraging habitat would remain unchanged for the short-term. However, based on fire history for the district, and the continued forest succession, growth and structure development, the likelihood and risk of a large stand-</p>

	<p>maintain overstory canopy (goshawk nest stands), stands with high crown cover (CT and CT1) and, areas of irregular terrain, irregular canopy, and structure that promote a patchwork of understory diversity, habitat conditions for migratory birds;</p> <p>2) Migratory bird species would be adequately protected through BCLMP design criteria and activity timing restrictions;</p> <p>3) Diverse migratory bird habitat is widely distributed and maintained in the BCLMP area;</p> <p>4) The BCLMP maintains suitable migratory bird habitat while providing measures to reduce large, stand replacement fires;</p> <p>5) Migratory bird numbers are stable or increasing in the cumulative effects analysis area; and</p> <p>6) Treatments are designed to increase landscape resiliency to wildfire thereby maintaining and improving habitat for Habitat Indicator Species / Management Indicator Species as well as other species over time (USFS, 1986, P. 18).</p>	<p>replacement wildfire would remain. In this event, the availability of forested habitat, primarily in the form of large, live trees, would be greatly reduced throughout the BCLMP area. The amount and location of future wildfire impacts to migratory bird habitat is not reliably predictable due to the variables such as weather, fuel moisture, and success of fire suppression operations.</p>
<b>Amphibians &amp; Reptiles</b>	<p>The action alternatives MAY AFFECT, BUT IS NOT LIKELY TO ADVERSELY AFFECT THE PLAINS SPADE FOOT, GREAT PLAINS TOAD, NORTHERN LEOPARD FROG, GREATER SHORT-HORNED LIZARD, MILK SNAKE, AND WESTERN HOG-NOSED SNAKE OR THEIR HABITATS for the following reasons:</p> <p>1) The proposed action is designed to maintain or enhance grassland, shrubland and riparian habitat conditions for the analyzed amphibian and reptile species;</p> <p>2) Amphibian and reptile species would be adequately protected through BCLMP design criteria;</p> <p>3) Diverse amphibian and reptile habitat is widely distributed and maintained in the BCLMP area;</p> <p>4) The BCLMP maintains suitable amphibian and reptile habitat while providing measures to reduce large, stand replacement fires;</p> <p>5) Amphibian and reptile numbers are stable or increasing in the cumulative effects analysis area; and</p> <p>6) Treatments are designed to increase landscape resiliency to wildfire thereby maintaining and improving habitat for these species over time.</p>	<p>Amphibians and reptiles are generally habitat specialists and are relatively restricted to certain cover types such as grasslands and wetlands or grassland/sagebrush. None of these species analyzed are exclusively dependent on ponderosa pine forests. Under the no action alternative, amphibian and reptile habitat would remain unchanged for the short-term. However, based on fire history for the district, and the continued forest succession, growth and structure development, the likelihood and risk of a large stand-replacement wildfire would remain. In the event of a stand-replacement wildfire, the availability of forested habitat would be greatly reduced. Amphibians and reptiles may benefit from the increased availability of grassland habitat.</p>